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**ONE** NATION  
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BOOK

on Nursing Officer/Staff Nurse Recruitment Exams



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# 8th

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**Ambili M Venugopal**

Foreword  
**Danasu R**  
Roy K George  
Sandhya Gupta  
Reddemma K  
Indarjit Walia

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**8th**

PHYGITAL Edition  
(Book+Digital)

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## Foreword

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Roy K George  
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Reddemma K  
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## Foreword to 8th Edition

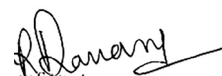
**I**t is a privilege to introduce the thoroughly Revised and Updated 8th Edition of Target High. This edition reflects the commitment of the authors to provide an up-to-date, comprehensive, and exam-oriented resource for nursing aspirants across India.

In this latest edition, all recent updates up to 2025 have been carefully included. The content has been aligned with NORCET, state-level examinations, and the revised nursing curriculum. Special focus has been given to competency-based learning, clinical reasoning, and evidence-based questions.

A major highlight is the launch of Target High Digital Pro, a dedicated mobile application that supports blended learning. Through this app, students can access interactive MCQs, rationales, case-based discussions, practice modules, and performance tracking. This integration of print and digital platforms enhances flexibility and ensures a modern learning experience.

Illustrations, tables, and flowcharts have been further enriched to simplify revision and improve retention. With more practice questions, updated rationales, and digital support, this edition serves not only as an exam guide but also as a tool to build professional competence and confidence.

I congratulate the authors Dr Muthuvenkatachalam Srinivasan and Mrs Ambili M Venugopal for this valuable contribution. I strongly recommend Target High as a steadfast companion for every nursing aspirant in their pursuit of success and excellence.



**Dr Danasu R**

Professor cum Principal  
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**Nursing Knowledge Tree**  
An Initiative by CBS Nursing Division

## Foreword to 7th Edition

**I**t gives me immense pleasure to introduce this thoroughly Revised and Updated 7th Edition of “Target High: Nursing Entrance Exam Guide”. In this edition, authors have meticulously curated a comprehensive and all-encompassing resource to empower aspiring nursing professionals with the knowledge and skills needed to excel in their journey toward success. With a keen focus on latest developments, all the most recent information, current affairs, programs, policies, and the latest exam patterns up to July 2023 have also been incorporated in this edition.

This book continues to be testament to authors’ commitment of providing the most relevant and up-to-date content for nursing aspirants. With a keen eye toward enhancing your preparation strategy, a separate section has been dedicated to decoding case-scenario based questions, along with insightful guidance on navigating NORCET 5.0 Stage I-Prelims and NORCET Stage II-Mains.

In alignment with the evolving landscape of nursing education, this edition organizes all subjects according to the New Revised INC Curriculum. Furthermore, the authors have expanded the scope of this book by including two new subjects, *Applied Psychology and Sociology*, along with *Forensic Nursing*, ensuring that students are well-prepared for the diverse challenges of the nursing profession.

To facilitate effective learning, an attractive layout that combines theory with previously-asked questions from important exams, including NORCET 2023, 2022, and the latest state-level exams has been followed. Within these pages, you will find more than 1000 important key points, meticulously crafted synopses for Fundamentals of Nursing, Obstetrics and Gynecology, Pediatric Nursing, and Community Health Nursing, and over 1000 illustrative tables, images, flowcharts, and illustrations which will help you in clarifying the concepts.

The digital age demands a strong digital support system so, Target High has been supported with a digital boost having a variety of features. With over 25,000 MCQs, including 500+ new questions, 5,000 MCQs with rationale, 15,000 practice questions, and an array of integrated clinical-based and case-based questions, this edition is a treasure trove of learning and practice opportunities.

As you embark on this transformative journey, authors have rest assured that you have in your hands a comprehensive and powerful tool that has been honed and perfected over time. The inclusion of 116+ previous year papers, 3000+ golden points for last-minute revisions, and a wide array of appendices further solidify the status of edition as a beacon of knowledge and guidance.

I extend my heartfelt gratitude to the authors of this book who have tirelessly worked to bring this edition to fruition, and I wish all nursing aspirants the very best in their pursuit of excellence. May “Target High: Nursing Entrance Exam Guide” be your steadfast companion, guiding you toward success and accomplishment in the dynamic and rewarding field of nursing.



Nursing Knowledge Tree  
An Initiative by CBS Nursing Division

**Prof. (Dr) Roy K George**

Former National President, TNAI  
Director Academics, Baby Memorial Hospital  
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## Foreword to 6th Edition

I know Dr Muthuvenkatachalam when he joined as a student for Postgraduate studies at AIIMS, New Delhi followed by PhD which also he did under my guidance from PhD Consortium of Indian Nursing Council and Rajiv Gandhi University of Health Sciences. And thereafter, we have done some research projects together. I would like to emphasize here that he is highly motivated to improve the standard of nursing education. His dedication is visible from the way he has been putting efforts to update this 6th edition of book *Target High* which is already on runaway success and enjoys greater acceptance and appreciation by all readers.

In my opinion, the book has the original contents, which are well thought out, keeping in mind ever changing health science, treatment protocols and health care delivery system. The work in this book requires praise for the author in doing evidence-based updating of content of *Target High 6th Edition* from each reader who will get oneself ready for all competitive exams in Nursing Science.

The *Target High 6th Edition* is prepared with interactive approach and the content is supported with several examples and illustrations for better understanding of complex content. This book is one single platform for students who are looking forward to crack any of the entrance exams, particularly for the nursing officer's and staff nurse positions in the country.

I congratulate Dr Muthuvenkatachalam Srinivasan for bringing out *Target High 6th Edition* at the right time when the competition is all time high. Dear readers, this book is well referenced from standard books and will work as guide for you in all areas of nursing science and will motivate you to excel in your professional practice in addition to success in entrance exams.

**Dr Sandhya Gupta**

Formerly-Principal (Actg.) & Associate Professor  
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## Foreword to 4th & 5th Edition

Nursing Knowledge Tree  
An Initiative by CBS Nursing Division

In this fast-paced world, the healthcare industry has become an area of utmost importance. People have become more aware about their bodily needs and they are ready to spare their valuable time for keeping themselves hale and hearty. In such circumstances, the personnel working in the field of nursing have to perform a crucial role. To perform their roles with dexterity and sheer determination, the nursing professionals have to keep themselves updated with the modern techniques of healthcare and for this, they have to explore the nursing examination system.

It is my privilege to write the foreword of a book which is a gem of a book available for the staff nurses and nursing officers' exam. There is no dearth of books for the nursing recruitment examination but it is a fact that the aspirants need something which could prove a panacea for such examinations, and the book, *Target High* for Nursing Officer/Staff Nurse Recruitment Exam is one such effort of the authors. Dr Muthuvenkatachalam Srinivasan and Mrs Ambili M Venugopal have produced a wonderful book which will undoubtedly help the aspirants in hitting the bull's eye. The authors are masters of their fields and so they have included everything which is needed by the aspirants of this exam.

In addition to this, renowned reviewers have reviewed the important topics of this book and these topics enhance the accuracy and authenticity of this book. After going through I can say with authority that this book has certainly an edge over the other books available for *Nursing Officer/Staff Nurse Recruitment Exam*.

I wish the authors all the luck and success, and really appreciate their commendable efforts which is a boon in true sense for the nursing officers'/staff nurses' aspirants.



**Reddemma K**

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## From Authors' Desk

It gives us immense pleasure to present the Eighth Edition of TARGET HIGH, a book that has consistently strived to be the most trusted and comprehensive guide for nursing competitive examinations in India. Over the years, TARGET HIGH has evolved to reflect the changing trends of examinations, the expectations of recruiters, and, most importantly, the needs of aspirants. Each edition has been enriched with feedback from students and teachers, and with evidence from the most recent exams.

In this Eighth Edition, a major step forward has been taken to make the content more exam-focused and learner-friendly. All questions from the latest previous year examination papers have been carefully incorporated into the respective subjects and topics. This method allows aspirants not only to practice but also to understand the importance of specific topics based on their recurrence and strike rate in examinations. By blending theory, practice, and exam relevance, this edition offers a structured pathway for targeted preparation.

Aspirants of NORCET and other national-level nursing exams will find this edition particularly useful. The inclusion of Clinical Case-Based Questions and Image-Based Questions reflects the current pattern of examinations and provides much-needed practice in application-oriented learning. Additionally, Assertion and Reason type MCQs and Match the Following type MCQs have been introduced, keeping in mind the possibility of such formats being adopted in future exams. This ensures that learners are not only prepared for the present but are also future-ready.

One of the most exciting advancements in this edition is the integration of digital learning support. The TARGET HIGH Digital Pro App has been launched to provide aspirants with extended access to resources. Through this platform, readers can access more than 100 previous year papers, additional explanations, clinical scenarios, and supplementary content that could not be accommodated within the printed text. This blended learning approach, combining book and app, will help students prepare more efficiently, track their progress, and revise at their own pace.

This edition, therefore, represents more than just an update; it is a complete re-envisioning of how nursing competitive exam preparation can be approached. With its enriched content, diverse question formats, and the support of digital tools, the Eighth Edition of TARGET HIGH aims to stand as a one-stop solution for every serious aspirant.

It is our earnest hope that this edition will continue to motivate and guide students in their journey toward success. We remain grateful to the nursing community for the overwhelming support extended to this book through all its earlier editions. The trust of readers has been the driving force behind every improvement and innovation. We are confident that this edition will once again prove to be a reliable companion in your preparation, helping you achieve your dreams with confidence and clarity.

This work is lovingly dedicated to our parents, children, teachers, and students whose constant support, guidance, and inspiration have been the true strength behind this endeavor.

An Initiative by CBS Nursing Division



**Muthuvenkatachalam Srinivasan**  
**Ambili M Venugopal**

# Acknowledgments

## *Thanking the Almighty for His Immense Blessings!!!*

With humility, we acknowledge our indebtedness to all. The task of writing a book and updating the matter in accordance with the changing scenario is harder than we thought and more rewarding than we could have ever imagined. None of this would have been possible without your incredible support. We are eternally grateful to all of you for playing a vital role during our struggle and success for the Target High Seventh Edition. Now, with the blessing and support from all of you, we are presenting **Target High Eighth Premium Colored Hybrid Edition** with a new look, updated and upgraded content, additional features and digital support as per the need and demand of the time.

From the inception, with profound love, we owe sincere gratitude to our parents, siblings and daughters for their unconditional love, support, understanding and forbearance throughout the ups and downs in the journey of this book.

It is very well said that a teacher is a great source of knowledge, prosperity and enlightenment by which anybody can be benefited. Our teachers deserve the credit for the gift of their guidance, invaluable suggestions, constructive criticism and perpetual inspiration, which inspired us in our difficult time, kept us motivated and enabled us to complete this book.

We sincerely express our profound gratitude to **Dr Sandhya Gupta**, Formerly Principal (Actg.) and Associate Professor, College of Nursing, AIIMS, New Delhi, whose guidance, inspiration, and motivation instilled in us the confidence to undertake and complete this book. We also extend our heartfelt thanks to **Dr Latha Venkatesan**, Professor cum Principal, College of Nursing, AIIMS, New Delhi, for her unwavering mentorship and continuous support. Furthermore, we gratefully acknowledge **Dr Danasu R**, Professor cum Principal, College of Nursing, AIIMS, Mangalagiri, Andhra Pradesh for her encouragement and steadfast support in this pursuit.

Words fail to express our gratitude to Dr Ratna Prakash, Professor and Academic Director (Former Principal), Pal College of Nursing and Medical Sciences, Haldwani, Uttarakhand for her unconditional support and encouragement on initiating this book.

We extend our sincere gratitude to Mrs K Kiruthiga, MSc, DMLT, and Mrs A Gomathi, MSc., MPhil., (Statistical Consultant) for their valuable contributions to the content development and review process. We wish to express our heartfelt thanks and regards to all those, who have contributed appropriate and relevant information to this book. Without their cooperation, this endeavor might not have been possible.

These acknowledgments will be incomplete without mentioning the role of our beloved students, who have always been our well-wishers, constant supporters and source of learning and encouragement.

We appreciate the support of **Mr Satish Kumar Jain** (Chairman) and **Mr Varun Jain** (Managing Director), M/s CBS Publishers and Distributors Pvt Ltd for their wholehearted cooperation in publication of this book. We have no words to describe the role, efforts, inputs and initiatives undertaken by **Mr Bhupesh Arora** (Sr. Vice President – Health Sciences Division, Publishing & Marketing), for his endeavor toward the development of the book.

We sincerely thank the entire CBS team for bringing out the book with utmost care and attractive presentation. We would like to thank Ms Nitasha Arora (Assistant General Manager – Publishing) and Dr Anju Dhir (Sr. Product Manager cum Commissioning Editor) for their publishing support. We would also like to extend our thanks to Ms Surbhi Gupta (Sr. Editor cum Team Lead), Mr Ashutosh Pathak (Assistant Production Manager cum TL) and all the production team members for devoting laborious hours in editing, designing and typesetting the book.

Our special thanks are due to entire Sales, Marketing and Tech team—Mr Chiradeep Bose (General Manager – Central Marketing and Sales Offline Unit), Ms Neetu Jindal (Assistant General Manager – Marketing) and Ms Preeti Arora (Tech and Operation Head) for their special contributions in offline & online marketing and strong tech support.

We owe special thanks to all Branch Heads for their contributions toward making the book available throughout India and turning our idea of “ONE NATION, ONE NORCET, ONE BOOK” into a reality.

We are also thankful to our colleagues who helped us to formulate ideas when they did not even know that they were helping. Their involvement has triggered and nourished our intellectual maturity. Once again, we express our heartfelt gratitude to the unstinting support given by our friends and everyone in our team.

Finally, we would like to thank everybody who is important to the successful realization of this book and express our apology if we missed anyone's name, which we assure is completely inadvertent.

## From the Publisher's Desk

**Target High** no longer needs an introduction. Over the last decade, it has become a trusted name across India, reaching more than **5 lakh readers**. Every year, lakhs of nursing aspirants secure government jobs at both central and state levels with the support of *Target High*.

This journey of excellence has been possible only because of our commitment to **high standards, quality, and error-free content**, and—above all—the **unwavering trust of our readers**.

At CBS, we have always been **trendsetters**, bringing meaningful changes that reflect the evolving needs of students. The same philosophy drives *Target High*. The updates and transformations we bring in each edition are consistently aligned with the latest exam patterns. This is why *Target High* continues to stand apart as the **most preferred book for nursing competitive examinations**.

Quality comes with responsibility, and we are always ready to shoulder it. With this spirit, we are delighted to announce the release of the **8th Hybrid Edition of Target High**—now with a powerful feature of **integrated learning: Read from the Book and Practice from the TH Digital App**.

This book-app synergy offers a unique and engaging learning experience. A few of its standout features include:

TH 8th Edition Book	TH Digital ( <i>Your Success Now Digital</i> )
<ul style="list-style-type: none"><li>• Enriched and updated Content covering 18,000+ Qs, 1000+ IBQs, 1000+ CBQs, and 150 Previous Year Papers.</li><li>• Strong Digital Support including Read, Practice, Revise and Recall features.</li><li>• Sync with recent pattern of NORCET and other Competitive exams.</li><li>• NORCET 1.0 to 8.0 Recall added (Subject-wise and Topic-wise)</li><li>• New Updates up to 2025 included.</li><li>• Bestseller title from decades with trust of 5 lakhs readers.</li><li>• Perfect blending of Theory and MCQs, IBQs, Clinical MCQs, Match the following and Assertion and Reasoning for effective learning.</li><li>• Integrated with App for engaging learning.</li><li>• Includes NORCET Trending topics.</li><li>• Two-way learning: Read from the Book and Practice from the App.</li></ul>	<ul style="list-style-type: none"><li>• Thoroughly revised content with all updates till 2025, enriched with high-yield topics and resources.</li><li>• Complete Cycle of Mastering any Nursing Competitive exam: <b>Read • Practice • Revise • Recall • Succeed</b><ul style="list-style-type: none"><li>■ <b>Read:</b> Study Digitally—Mind Maps, One-Minute Learning, Clinical Corners (Subject-wise and topic-wise).</li><li>■ <b>Practice:</b> Test Yourself—18,000+ Qs covered in MCQs, CBQs, IBQs/Mini and Grand Tests/Previous Year Paper Recalls/ Weekly Live Tests and Exam-focused Test Series.</li><li>■ <b>Revise:</b> Golden Points, Podcasts, Conceptual Videos and 3D Animations for quick recap.</li><li>■ <b>Recall:</b> 150+ Exam Recalls in quick-access PDFs.</li><li>■ <b>Succeed:</b> TH Olympiads—Reward Yourself, Compete, Earn scholarships and get ranked Nationally with exciting rewards.</li></ul></li><li>• <b>Personalized Guidance and Extra Edge:</b> Get counseling and customized study plans, along with bonus content, latest updates, GK and Aptitude add-ons for an all-round prep.</li><li>• <b>Be in the Spotlight:</b> A special section to recognize Target High Contributors, Reviewers, Rank Holders, and Happy Users.</li></ul>

We remain committed to delivering the **best, updated, and reliable content**. At the same time, we humbly acknowledge that no work is ever perfect. As the saying goes, 'to err is human'. Therefore, we wholeheartedly welcome **constructive feedback** from our readers—helping us make every new edition even more refined than the last.

Wishing you success in your journey.

All the best!

**Bhupesh Aarora**

Sr. Vice President – Health Sciences Division (Publishing & Marketing)

**CBS Publishers and Distributors Pvt Ltd**

Dated: 13-09-2025







# Attention to the Readers!

Stop **PIRACY!** Promote **ORIGINALITY!**

Dear All,

Target High Staff Nurse Recruitment Examinations have been conceptualized and developed with a sole purpose of benefitting thousands of staff nurse aspirants across the country by providing them a one-stop solution to everything they need to excel. Authors, publisher and everyone associated with this project aimed to channelize your efforts with this book so as to save your time and money you invest in referring various different resources for the same information.

However, it has come to our notice that widespread illegal distribution of photocopies and PDFs is already taking place in the market. We would like to acquaint you with the fact that Indian Reprographic Rights Organization (IRRO), a copyright society registered under the Copyright Act, permits only up to 15% of a copyrighted work to be reproduced. Also, the usage should be non-commercial and non-profitable. Photocopying the whole book/uploading PDFs or images of the book without the due permission of author or publisher is punishable under the Copyright Act as it weighs against the fair use policy because completely copying and distributing the work for free online and physically would hinder the economic viability of creating and maintaining the source.

We are aware of the resources from where these practices are emerging and coming into existence. In case, anyone of you come across such practice going around you, please reach us at [admin@cbspd.com](mailto:admin@cbspd.com) We would take strict legal actions against the alleged without any prior notice. If your information is found genuine, we will also reward you. Please note that in this whole process, we assure that your identity would be kept confidential.

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Today it's someone else's work! Tomorrow it could be Yours!

**Publisher**





# Luminaries

## in Nursing

We overcome with felicity in showcasing our gratitude toward the Luminaries in Nursing for they have recommended Target High Series wholeheartedly. A book becomes great because of two important reasons, firstly, the efforts put in by the authors and secondly, when the book is recommended by the elite faculty members. Here, as far as Target High is concerned, the topnotch Luminaries, by their recommendations, have made its success twofold. We express our heartfelt thanks to the Luminaries who always support quality education in Nursing and they believe that quality education should, in every form, be provided to the Nursing Students and Nursing Fraternity.

We, the Target High team, have maintained the high standards of quality education. And the outcome is that the splendid luminaries combinedly proclaim that they recommend Target High as "One Nation, One NORCET, One Book" for Nursing competitive exams.



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CBS Team Extends its Whole-hearted

*Thanks*  
to all the  
Luminaries

Target High is a book worth reading and hence, worth buying

Our luminaries believe

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Series comes with Unique Features

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-Dr. Seuss



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We, the authors and the publisher, are grateful to all the reviewers who spent some time from their busy schedules and invested it in reviewing the book, making it most authentic and unique quality compendium.

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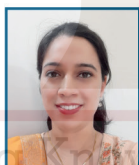
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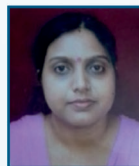
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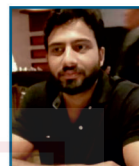
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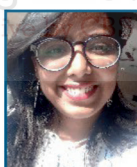
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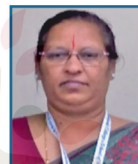
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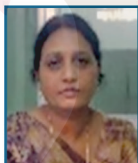
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# How to Prepare for NORCET (Prelims and Mains): An Overview

The recent changes in NORCET exam pattern have brought two stages of exams: Stage I – NORCET Preliminary and Stage II- NORCET Mains.

**NORCET examination will be conducted in two successive stages as described below:**

**Stage I:** NORCET Preliminary

**Stage II:** NORCET Mains

The overview of NORCET new pattern and how TARGET HIGH can be effectively used for preparation is illustrated below.

	Stage I- NORCET Prelims	Stage II- NORCET Mains
Exam pattern	<ul style="list-style-type: none"> <li>100 MCQs – 100 marks</li> <li>80 Questions from nursing subjects at BSc nursing level</li> <li>20 Questions from GK &amp; Aptitude.</li> <li>Computer-based test</li> </ul>	<ul style="list-style-type: none"> <li>100 MCQs – 100 marks</li> <li>Case scenario-based questions</li> <li>Nursing skill related questions</li> <li>Computer-based test</li> </ul>
Time duration	90 minutes	90 minutes
Negative marking	1/3 per wrong answer. (-0.33 per wrong answer)	1/3 per wrong answer. (-0.33 per wrong answer)
Scheme of exam	<p><b>Qualifying in nature</b></p> <ul style="list-style-type: none"> <li>50% for UR/EWS</li> <li>45% for OBC</li> <li>40% for SC &amp; ST</li> <li>Additional 5% relaxation for PWBD</li> </ul> <p>However, NOT all eligible candidates will be called (shortlisted) for Stage-II exam.</p> <p>Only 5 times the total seats in each category (UR, OBC, SC, ST, EWS) will be shortlisted to write Stage-II-Mains exam.</p> <p>For example, if the vacancy position is UR-100, OBC-25, SC-15, ST-7, &amp; EWS-10), then the number of candidates shortlisted will be UR-500, OBC-125, SC-75, ST-35 &amp; EWS-50.</p> <p>The qualified candidates who are in tie with the last shortlisted candidates also will be called for Stage-II exam.</p> <p>All qualified PWBD candidates will be called for Stage-II exam.</p>	<p>The qualifying marks in the Stage-II, NORCET Mains Examination will be:</p> <ul style="list-style-type: none"> <li>50% for UR/EWS</li> <li>45% for OBC</li> <li>40% for SC &amp; ST.</li> <li>Additional 5% relaxation for PWBD</li> </ul> <p>Merit rank list shall be prepared based on performance in CBT as per qualifying criteria in Stage-II NORCET Mains.</p>
Difficulty level	Easy to moderate	Moderate to difficult
How to prepare using TARGET HIGH	<p><b>Theory:</b></p> <ul style="list-style-type: none"> <li>Synopses in the 8th edition is thoroughly revised, particularly the FON to enhance knowledge in basic nursing procedures and concepts.</li> <li>All the subjects as per the new INC syllabus have been included.</li> <li>Focus on reading the synopses of all subjects.</li> <li>Give attention to Key points, Practice questions and Questions from recent NORCET exams provided side-by-side in the synopsis for better understanding.</li> <li>Read, revise and reinforce the Golden Points given at the end of each synopsis. Those golden points are high yield points which are more likely to be asked in the Stage-I Prelims.</li> <li><b>GK &amp; Aptitude:</b> Keeping in mind the 20% weightage, the GK &amp; Aptitude content is improved and enriched with all recent updates, verbal and numerical reasonings, quantitative aptitude, etc. Most importantly, the GK &amp; Aptitude section is provided as a separate booklet.</li> </ul>	<p><b>Theory:</b></p> <ul style="list-style-type: none"> <li>Case scenario-based questions (CBQs) and Nursing Skill based questions are the only focus in the Stage II-Mains exam.</li> <li>They provide a strong foundation in disease conditions, signs and symptoms, physiological parameters, pharmacology, drug effects, and pathophysiology which are crucial for solving these questions effectively.</li> <li>Target High 8th Edition contains comprehensive information on these concepts, particularly in the synopsis part. The synopsis part also includes Case scenario-based questions side-by-side.</li> <li>The inclusion of 1000+ Case scenario-based questions with rationales in the book's various sections is seen as a valuable tool for test-takers to practice and enhance their understanding.</li> <li>Practicing these Case scenario-based questions can indeed be a beneficial strategy to refine and improve one's knowledge and problem-solving skills for the exam.</li> </ul>
How to boost preparation using TARGET HIGH Digital Lite	<ul style="list-style-type: none"> <li>You can prepare on the go with the Target High Digital Lite App.</li> <li>All the Target High readers are free to use this feature.</li> <li>Subject wise tests and Grand tests as per the recent pattern are provided from time to time.</li> <li>Voice over of Golden points can heard on the move. This will reinforce your memory of important key points.</li> </ul>	<ul style="list-style-type: none"> <li>Review and Practice additional Case scenario-based questions provided in the App to boost your preparation.</li> <li>Take Grand tests on the NORCET Mains pattern in the App.</li> </ul>



# Decoding the Case Scenario-Based Questions

## INTRODUCTION

Decoding the scenario-based clinical multiple-choice questions (MCQs) in nursing requires a systematic and strategic approach. Such questions assess a nurse's ability to apply clinical knowledge, critical thinking, and clinical judgment in various patient situations. To navigate these questions effectively, a step-by-step strategy can be employed.

This strategy involves a detailed 5-Points approach which is as follows:

1. Analyzing the question stem and options
2. Prioritizing nursing actions or interventions
3. Categories of case scenario-based questions
4. Normal vs abnormal and nursing action vs physician action
5. Answering complex case scenario-based questions using clinical judgment

Each of these approaches has been discussed in detail with suitable examples:

## ANALYZING THE QUESTION STEM AND OPTIONS

- The scenario-based MCQs will have two parts. The stem and the four options, out of which one option would be correct. The options other than the correct answer are known as distractors.
- The goal of these scenario-based MCQs is to assess the nurse's ability to apply knowledge, clinical reasoning, and critical thinking skills to make the best decision in a given patient situation.
- As a test-taker, it is crucial to carefully read and analyze both the stem and the options before selecting the most appropriate response based on your nursing knowledge and judgment.

### The Stem

- **Stem provides the context** and information about the patient or clinical situation.
- **Understanding the stem** and identifying the key terms or strategic terms are very important to answer the question.
- **Read the stem carefully:** Start by reading the stem carefully and pay close attention to the patient's condition, symptoms, vital signs, and any other relevant information.
- **Stem usually has two parts:** 1. *Scenario/Event*: The case scenario for which a nurse is caring for. 2. *Query*: What is the nurse expected to do? (nursing action).
- **Identify the main issue:** Determine the main problem or issue that the question is addressing. It could be:
  - a specific symptom
  - a change in vital signs
  - a complication, or
  - a potential risk to the patient.

**Note:** Considering the time limit (one minute per question), it is very important to read quickly and carefully to understand the key term or strategic term.

- **Look for quantitative information:** Keep an eye out for specific numerical data, such as vital signs, laboratory values, or medication doses. These values can be essential in identifying abnormal findings or trends.
- **Note qualitative descriptions:** Look for descriptive terms or adjectives that provide clues about the severity or character of the patient's condition. For example, words like "severe," "acute," "mild," "chronic," "sudden," or "gradual" can impact the urgency of the response.
- **Recognize key terms or strategic terms:** Recognize key terms or phrases which guide you to choose the correct answer. The key terms include: **first, initial, best, essential, priority, immediately, early, late, most appropriate, inappropriate, exclude, include, increased, decreased.**
- **Positive vs negative stem:** Look for a key word to determine whether the stem is positive or negative.
  - **Positive terms:** Positive terms in a stem include **Appropriate, True, Indicated** and **Understand**. For example, which statement **best** represents how should a nurse document these findings? In this case, you should look for a positive response (appropriate or right method) from the options.
  - **Negative terms:** Negative terms in the stem include **Not, Never, further (...further education or intervention required), Least, Avoid, Contraindicated**. For example, which intervention should be given the **least** priority in this case? In this case, you should look for the least important intervention (or inappropriate or unsuitable intervention) from the options.

### Example Question

#### Positive Stem

During the discharge process of a 12-year-old child with hemophilia, the nurse advises the parents regarding the **most appropriate** sports activity for the child. What sports activity does the nurse recommend?

- a. Swimming   b. Football   c. Field hockey   d. Basketball

#### Ans. (a) Swimming

**Explanation:** Hemophilia is a bleeding disorder characterized by a deficiency or dysfunction of clotting factors in the blood. Therefore, high-impact or contact sports should generally be avoided to minimize the risk of bleeding and injury. With that in mind, the nurse should recommend low-impact and non-contact sports. So, among the given options the most appropriate sports activity for the child is swimming.

**STRATEGY:** The key word **Most appropriate** leads to a positive or suitable or appropriate sports activity for the child with hemophilia.

## Example Question

## Negative Stem

Nurse Ramya, a palliative care nurse, is providing nursing care to a terminally ill patient during the dying and grieving process. She is aware that the **least important** goal of nursing intervention for this client is:

- Providing comfort measures
- Promotion of rest and sleep
- Increase self-esteem through cosmetic improvement
- Pain management

**Ans. (c) Increase self-esteem through cosmetic improvement**

**Explanation:** The nursing intervention should target pain management through pain-reduction techniques and analgesia, providing comfort measures, promotion of sleep and rest, and energy conservation for this patient. Though dying with dignity and self-esteem is important, increase of self-esteem through cosmetic improvement is not important for this client.

**STRATEGY:** The negative key term “least important” leads to choose the unimportant interventions among the given options.

## ALERT

**Double negatives in the stem:** While using the key word strategy, please be cautious about double negatives in the stem. If the stem has two negative terms, then you should look for positive response. For example, Stem: All of the following interventions are **contraindicated** in a patient with diabetes mellitus, **except**. In this stem, there are two negative key words; ‘contraindicated’ and ‘except’ which guide you to choose the positive or suitable intervention.

## Example Question

## Double Negatives

A 45-year-old patient has recently undergone a colostomy surgery. The nurse is providing dietary education to the patient. The nurse advises the patient **to avoid** the following foods to ensure optimal recovery, **except**:

- Consume high-fiber diet
- Encourage raw vegetables
- Encourage intake of legumes
- Encourage cereals made from refined flour

**Ans. (d) Encourage cereals made from refined flour**

**Explanation:** The question is asking for the food that the nurse should not advise the patient to avoid. Cereals made from refined flour are low in fiber and easy to digest, so they are not a concern after a colostomy surgery. The other choices are foods that are high in fiber and should be avoided after a colostomy surgery.

**STRATEGY:** Identify the double negative terms in the stem; ‘**to avoid**’ and ‘**except**’. This leads you to choose the appropriate or suitable diet for the patient with colostomy.

- **Pay Attention to time frames:** If time-related information is provided in the stem, consider how it might influence your response. For instance, the urgency of the intervention might differ between immediate actions and actions that can be taken later. On the other hand, time frame is important in deciding what is the appropriate action/intervention to be taken.

## Example Question

## Time Frame

A 2-year-old child weighing about 35 kg was brought to the emergency department **30 minutes** after accidental ingestion of 12 tablets of Paracetamol 650 mg. Which of the following intervention is the priority for this child?

- Administer N-Acetylcysteine
- Administer activated charcoal
- Perform gastric lavage
- Administer 5% dextrose in half normal saline

**Ans. (b) Administer activated charcoal**

**Explanation:** Treatment guidelines for an oral Paracetamol (acetaminophen) ingestion in children:

- Less than 4 hours after ingestion – Consider activated charcoal if dose is >150 mg/kg (activated charcoal is not advised if the ingested dose is unknown)
- 4–24 hours – Obtain plasma acetaminophen level as soon as possible. Start with N-Acetylcysteine (NAC) administration.
- Longer than 24 hours – NAC administration

**STRATEGY:** Time-related information is a key to solve this question. Time frame 30 minutes (<4 hours) is the key factor for the treatment option. If time frame exceeded 4 hours, the answer would be a. Administer N-Acetylcysteine.

## Options

You have read about the stem carefully and understood the client conditions, and parameters, identified the key terms. Now, read the options carefully and try to match:

- Positive key terms with positive options (appropriate or suitable interventions)
- Negative key terms with negative options (inappropriate or non-suitable interventions)
- Double negative key terms with a positive option (appropriate or suitable interventions)

**Note:** The examples for these 3 scenarios were given earlier in this chapter.

Identify words or phrases in the options that have strong connection or similarity to words in the stem. Sometimes, the words in the options may be closely linked but not identical.

## Example Question

## Connection Words

A patient develops anaphylactic reaction to IV medication, which of the following should be the **immediate** response of a nurse?

- Call for emergency help
- Stop the medication administration immediately
- Administer IM Epinephrine
- Start CPR

**Ans. (b) Stop the medication administration immediately**

**Explanation:** The immediate response of the nurse should be removing the allergen (stopping IV medication in this case). The next step is to call rapid response and start basic life support (BLS/CPR) until the help arrives.

**STRATEGY:** Look for connection word ‘immediately’ in the stem and the option which guides the test-taker to option b.



## DECODING THE CASE SCENARIO-BASED QUESTIONS

Consider the following strategies while trying to choose the right option:

### 1. Use Elimination Process:

- Always apply the process of elimination.
- Carefully read each option, and after eliminating options, re-read the question before making your final choice.

### 2. Compare and Eliminate:

- Identify comparable or similar options and eliminate them from consideration.
- It is one of the key strategies in elimination process. If two options are similar or alike or comparable, then both are not the correct answer, so they can be eliminated.

### Example Question

#### Eliminate Similar or Alike Options

All of the following statements are true about SIADH lab values, EXCEPT (AIIMS Bibinagar, Faculty 2023)

- SIADH causes increased urine osmolarity
- SIADH causes elevated urine sodium concentration
- SIADH causes decreased plasma osmolarity
- SIADH causes increased plasma osmolarity

**Ans. (d) SIADH causes increased plasma osmolarity**

**STRATEGY:** Eliminate a and b because both are similar statements [elevated urine sodium concentration (b) = increased urine osmolarity (a)].

**Explanation:** Syndrome of Inappropriate Antidiuretic Hormone (SIADH) results in Increased. Antidiuretic Hormone (ADH) secretion, leading to increased water retention and dilution of the blood's solutes. The excess water retention causes the blood to become more diluted, resulting in a lower concentration of solutes in the blood and decreased plasma osmolarity. The other statements (a, b, and c) are true about SIADH lab values.

If two of the given options appear to be exactly opposite (or almost opposite) to each other, it is predictable that one of these two options is the correct answer.

### Example Question

Which type of analgesics are commonly used in ICU?

- NSAIDs
- Antiepileptic drugs
- Non-opioid analgesics
- Opioid analgesics

**Ans. (d) Opioid analgesics**

**STRATEGY:** In this example, non-opioid analgesics and opioid analgesics are opposite choices. Among them, the correct answer is opioid analgesics, which are most commonly used in ICU settings.

NSAIDs (A) fall under non-opioid analgesics (C); they are similar, so both are unlikely to be correct if only one can be chosen.

Eliminate synonymous distractors (A and C). Focus on opposites: Opioid vs Non-opioid. The context (ICU) favors opioid analgesics.

3. Consider encompassing or **umbrella options**: Check if any option covers a broader concept or scenario; it might be the correct choice. An example of umbrella options is **Administer fluids**. This option encompasses all of the different types of fluids that can be administered to patients, such as IV fluids, oral fluids.

Another example of umbrella options is **Provide emotional support** which encompasses options such as listening to the patient's concerns, offering words of encouragement, and providing touch therapy.

4. Watch for close-ended words: If you find close-ended words in options, the option is likely incorrect. Examples of close-ended words include 'Always', 'Never', 'Must'.

The words 'Always' and 'Never' imply that there is no exception to the rule. In reality, there is often exception to the rule.

### Example Question

#### Close-Ended words

During the discharge instructions, the nurse explains the concept of feedback in communication to the patient's family. In the context of healthcare communication, which understanding of feedback aligns with the principle that "communication is an interaction perspective"?

- Feedback is **never** intentional
- Feedback is sometimes unintentional
- Feedback is **always** intentional
- Feedback is seldom useful

**Ans. (b) Feedback is sometimes unintentional**

**STRATEGY:** Option a, c has close-ended words '**never**' and '**always**' respectively. Hence, they are unlikely the correct answer. Option (d) feedback is seldom useful is factually incorrect so it is easy to eliminate.

5. **Utilize therapeutic communication techniques:** For communication questions, use therapeutic communication techniques. Focus on the client's emotions, concerns, fears, and thoughts.
6. **Delegate with guidelines:** Use delegation and job description of Nursing personnel (Staff Nurse/Incharge-Nurse/Supervisor/Nurse Manager, and others) to align the client's needs with the health care provider's scope of practice.
7. **Pharmacology considerations:** If a question involves medication, apply pharmacology guidelines to choose the correct option.
8. Whenever the listed options include "notify the physician" or "document the findings," apply the strategy discussed later in this section to select or eliminate them.

### Prioritizing Nursing Actions or Interventions

- Prioritization is a crucial skill in nursing, and it involves determining an order of actions when faced with multiple tasks or patient needs.
- **Apply ABCs, Maslow's Hierarchy, and Nursing Process:** For prioritization questions, apply the ABCs (airway, breathing, circulation), Maslow's Hierarchy of Needs, and the nursing process steps to choose the right answer.

#### ABCs (Airway-Breathing-Circulation)

Recognize the critical importance of maintaining and prioritizing the client's airway, breathing, and circulation (in its order) in emergency situations.

The order of priority is Airway – Breathing – Circulation. To understand this better, let us expand on each element with reference to a nursing care scenario involving a patient who is brought to the Emergency Department after a Road Accident:





- **Airway:**
  - The first priority for the nurse is to assess the patient's airway to ensure it is clear and unobstructed. It is important to know that the airway is always the priority nursing action.

**Note:** During Cardiopulmonary Resuscitation (CPR), the order is CAB (Compression/Circulation, airway and breathing)

  - The patient is unconscious and may have suffered injuries of the head and neck due to the accident, increasing the risk of airway obstruction.
  - The nurse quickly opens the patient's airway using the jaw-thrust maneuver or head-tilt chin-lift technique, while maintaining spinal precautions if there is suspicion of cervical spine injury.
- **Breathing:**
  - After securing the airway, the nurse assesses the patient's breathing to ensure that it is adequate.
  - The patient may have compromised breathing due to chest trauma or internal injuries, as respiratory distress is a common concern in trauma cases.
  - The nurse assesses the rate, depth, and quality of the patient's breaths and provides supplemental oxygen if needed.
- **Circulation:**
  - Once the airway and breathing are stabilized, the nurse assesses the patient's circulation to check for signs of shock or hemorrhage.
  - The patient may have sustained internal bleeding or other injuries resulting in hypovolemic shock.
  - The nurse checks the patient's pulse, blood pressure, and skin perfusion to evaluate circulation and starts appropriate interventions, such as intravenous (IV) access and fluid resuscitation, if indicated.
  - Other interventions: (This step usually follows after ABC is addressed)
  - The nurse performs a thorough head-to-toe assessment to identify all injuries and prioritize care accordingly.
  - Collaborating with the healthcare team, the nurse may request imaging studies, such as X-rays or CT scans, to further evaluate and diagnose any internal injuries or fractures.
  - Pain management is initiated using appropriate medications to alleviate the patient's discomfort and reduce stress response.

### Example Question

#### A-B-C

An unconscious patient is brought to the emergency room after a road accident. Which of the following is the priority intervention for this patient?

- Assess for level of consciousness
- Assess vital signs
- Airway management
- Management of bleeding

**Ans. (c) Airway management**

**STRATEGY:** Apply A-B-C to prioritize nursing action in the given scenario which leads to airway management option.

### Maslow's Hierarchy of Needs

Understand the priority of addressing physiological needs before addressing higher-level needs. The hierarchy of Maslow's theory is as follows:

- **Physiological needs:** Air (oxygen), water (fluid), food, rest, and hygiene
- **Safety and Security needs:** Protection from injury or physical harm, safe environment.
- **Love and Belonging needs:** Social relationship, trusting interpersonal relationship, love and affection, sense of belonging.
- **Self-esteem needs:** Self-confidence, achievement, status and sense of accomplishment
- **Self-Actualization needs:** Realizing personal goals, pursuing creative activities, state of fulfilment.

### Example Question

#### Maslow's Hierarchy of Needs

A nurse is assigned to four patients in the surgical ward. Which patient's needs should the nurse address first according to Maslow's hierarchy of needs?

- A patient who is requesting assistance to reposition in bed due to discomfort.
- A patient who is feeling lonely and asks to talk to a friend on the phone.
- A patient who is postoperative and requires pain medication for incisional pain.
- A patient who wants to participate in an art therapy session in the recreation room.

**Ans. (c) A Patient who is postoperative and requires pain meds.....**

**STRATEGY:** Apply Maslow's hierarchy of needs. Physiological needs, such as pain relief, take precedence over higher-level needs (comfort, need for relationship and recreation) in the hierarchy.

### Nursing Process

Utilize the steps of the nursing process (assessment, diagnosis and analysis of the problem, planning, implementation, and evaluation) to prioritize the nursing action.

Each step of the nursing process can guide the test taker in answering Case Scenario-based questions:

**Assessment:** If the question stem lacks specific details about the client's condition or assessment outcomes, the test taker should prioritize selecting the assessment option that will provide crucial data to guide further action.

For example, if a question involves a client with a suspected infection but lacks specific vital signs or laboratory results, choosing the assessment option related to collecting vital signs or obtaining a culture sample would be the appropriate first step.

The following key words in the 'option' indicate that it is related to assessment:

- |             |             |
|-------------|-------------|
| • Determine | • Ascertain |
| • Find out  | • Collect   |
| • Assess    | • Check     |



# DECODING THE CASE SCENARIO-BASED QUESTIONS

- Identify
- Gather
- Monitor
- Obtain information
- Recognize
- Observe

## Example Question

### Nursing Process - Assessment

Two days after the coronary angiography, the client reports an increased pain and discomfort at the catheter site, what should the nurse do?

- a. Explain the client that it is normal after coronary angiography
- b. Assess the signs for infection
- c. Elevate the affected extremity
- d. Give massage to the pain site

**Ans. (b) Assess the signs for infection**

**STRATEGY:** The client's report of pain and discomfort at catheter site indicates the possibility of infection. So, the nurse should assess for signs of infection to decide further action.

**Diagnosis (Analysis of problem):** If the question stem provides assessment data or specific client information, the test taker should proceed to analyze the data and identify the most relevant patient problem (nursing diagnosis) which needs to be addressed. For instance, if the question describes a client with shortness of breath, wheezing, and a history of asthma, the test taker would recognize that the nursing diagnosis "Impaired Gas Exchange related to bronchoconstriction" is appropriate based on the presented data.

**Planning:** If the problem is clearly stated in the question stem, the test taker should focus on selecting appropriate nursing interventions or actions to address the client's needs. For example, if the problem stated is "patient with acute pain related to surgical incision," the test taker would indeed choose interventions such as administering pain medication, using comfort measures, and repositioning the client for pain relief.

However, if any of the options present an assessment action, such as "assess the level of pain," the test taker should prioritize selecting the assessment option. Assessing the level of pain is critical to understanding the intensity and nature of the client's pain, which is essential for choosing the most effective pain management intervention. By assessing the pain level, the nurse can determine the appropriate type and dosage of pain medication or other comfort measures needed to provide optimal pain relief.

**Implementation:** In this step, the test taker should consider the selected nursing interventions and determine which action to implement first based on the client's immediate needs and safety.

For instance, if the nursing interventions include wound dressing, administration of insulin, and patient education, the test taker would prioritize administration of insulin to address the client's immediate physiological needs.

Apply ABC, Maslow's hierarchy of needs and nursing process steps to prioritize the nursing interventions (as discussed above).

**Evaluation:** This is the final step of nursing process. In evaluation, the nurse assesses the client's response to the nursing interventions and compares it to the expected outcomes set during the planning phase. If the question stem explicitly asks the test taker to identify the effectiveness of the implemented nursing interventions or determine whether the client's desired outcomes have been achieved, then the appropriate response would be options related to evaluation.

If the question stem states that the client's desired outcomes have been met, the test taker would choose options related to reinforcing the successful interventions or documenting the positive outcomes.

## Example Question

### Concept: Evaluation (NORCET 2021)

A 17-year-old student has a long history of bronchial asthma and has experienced several severe asthmatic attacks during the school year. The school nurse is required to administer 0.2 mL of 1/1000 solution of epinephrine SC during an asthma attack. How does the school nurse evaluate the effectiveness of this intervention?

- a. Increased pulse rate
- b. Increased expectorate of secretions
- c. Decreased inspiratory difficulty
- d. Increased respiratory rate

**Ans. (c) Decreased inspiratory difficulty**

**STRATEGY:** The stem has key word "nurse evaluate". The expected outcome after administration of Epinephrine SC during asthma attack should be evaluated. Think of a positive outcome among given options.

## Categories of Case Scenario-based Questions

Case scenario-based questions are designed to assess the nurse's ability to:

- Provide safe and effective care environment
- Provide care to maintain physiological integrity of patients
- Provide care to maintain psychosocial integrity of patients
- Promote health maintenance in patients.

### Provide Safe and Effective Care Environment

Questions in this category assess the nurse's ability to:

- Provide safe nursing care to clients.
- Collaborate effectively with other healthcare team members to ensure optimal client care
- Protect clients, their significant others, and healthcare personnel from environmental hazards.

### Key Areas for Safety-related Questions:

- **Hand washing:** Give stress on the importance of proper hand hygiene to prevent the transmission of infections.
- **Asepsis:** Emphasize the importance of maintaining a sterile environment during procedures to minimize the risk of infections.
- **Call lights or bells:** Address the significance of promptly responding to clients' calls or bells for assistance to ensure their safety and comfort.
- **Bed positioning:** Explain the appropriate positioning of clients to prevent complications such as pressure ulcers and respiratory issues.
- **Appropriate use of side rails:** Discuss the safe use of side rails to prevent falls while considering individual client needs.
- **Use of standard and other precautions:** Review the implementation of infection control practices to safeguard against the spread of communicable diseases.
- **Triage:** It describe the process of prioritizing patients based on the severity of their condition in emergency situations.
- **Emergency response planning:** Highlight the importance of having well-defined protocols to manage emergencies effectively and efficiently.





### Physiological Integrity of Patients

These questions in the Physiological Integrity category assess the nurse's ability to:

- Provide care related to comfort and assistance with activities of daily living for clients.
- Administer medications and parenteral therapies safely and accurately.

**These Questions also Evaluate the Nurse's Capability to:**

- Minimize the client's risk of developing complications or health problems related to treatments, procedures, or existing medical conditions.
- Deliver care to clients with acute, chronic, or life-threatening physical health conditions.

**Key Focus Areas for Physiological Integrity Questions:**

- Care related to comfort and activities of daily living
- Medication administration
- Parenteral therapy safety
- Minimizing the risk of complications
- Understanding procedures and treatments
- Assessing and monitoring clients
- Client education

### Psychosocial Integrity of Patients

These questions focus on providing nursing care that helps clients and family members to cope, adapt, and solve the problems in challenging situations, such as illnesses, disabilities, or stressful events, like abuse, neglect, or violence.

Within this category, test takers may encounter communication-type questions that assess how the nurse responds to clients, their family members, significant others, or other members of the health care team.

When approaching psychosocial integrity questions, it is essential to use therapeutic communication techniques. These techniques are effective in promoting a supportive and healing communication process between the nurse and the client or significant others. The nurse should choose options that address the thoughts, feelings, concerns, anxieties, or fears of the client, their family members, or significant others.

In answering psychosocial integrity questions, the nurse should consider the client's emotional and mental well-being as well as his/her social context. This may involve demonstrating sensitivity to cultural differences, respecting client's autonomy and decision-making, and collaborating with other health care team members to provide comprehensive and patient-centered care.

#### Example Question

##### Psychosocial Integrity

A nurse is caring for a client who has recently been diagnosed with a chronic illness. The client appears anxious and expresses concerns about managing the condition and its impact on his daily life. Which therapeutic communication response by the nurse is the most appropriate?

- "I understand how difficult this must be for you. You will get through this."
- "Do not worry; the treatment for this illness is very effective."
- "You should focus on the positive aspects of your life and do not dwell on the illness."
- "Tell me more about your concerns and how this diagnosis is affecting you."

**Ans. (d) "Tell me more about your concerns and how this diagnosis is affecting you."**

**Explanation:** Option (d) demonstrates therapeutic communication by actively listening to the client's concerns and inviting him/her to share her thoughts and feelings openly. It acknowledges the client's emotional state and allows him to express his/her fears and anxieties related to the chronic illness. This response promotes trust and rapport between the nurse and the client, which is essential in supporting the client's psychosocial well-being.

Options (a) and (b) may be dismissive and closing the conversation. It does not encourage the client to express his feelings. Option (c) may come across as minimizing the client's emotions and may effectively address his concerns.

#### Example Question

A nurse is caring for a client who has been diagnosed with a terminal illness. The client appears distressed and says, "I am scared of what the future holds." Which response by the nurse is the most appropriate?

- "You have nothing to be scared of. Everything will be okay."
- "Why are you feeling scared about the future?"
- "Do not worry about the future. Focus on the present."
- "Can you tell me more about your concerns?"

**Ans. (d) Can you tell me more about your concerns?"**

**Explanation:** Option (d) is the most appropriate response as it asks the client to share more about his concerns, the nurse encourages open communication and creates a supportive environment for the client to express his emotions. This therapeutic communication approach allows the nurse to understand the client's fears and provide appropriate emotional support.

Options (a) and (c) do not address the client's feelings effectively and may not provide the opportunity to client to express further concern. While Option (b) is attempting to understand the client's feelings, it uses a non-therapeutic communication technique by asking "why."

### Promote Health Maintenance in Patients

This category of questions assesses the nurse's ability to provide and direct nursing care to promote and maintain the client's health.

These questions focus on assisting client and significant others during the normal expected stages of growth and development, as well as providing care related to the prevention and early detection of health problems.

**While approaching health promotion and maintenance questions, it is essential to keep the following points in mind:**

- **Focus on client teaching:** If the question involves client teaching, use the Teaching and Learning theory to guide your response. Remember that the client's willingness, desire, and readiness to learn should be the first priority.

Consider the client's individual learning needs and preferences when providing education and ensure that the information is delivered in a way that it is easily understandable and applicable to the client's situation.

Contd...

## Example Question

### Assess Readiness to learn Before Teaching Client

A nurse is providing education to a client diagnosed with diabetes mellitus. The client seems disinterested and unmotivated to learn about blood glucose monitoring and insulin administration. What is the nurse's best approach?

- Continue providing the education despite the client's lack of interest.
- Suggest involving the client's family in the teaching session.
- Assess the client's readiness to learn and address any barriers to learning.
- Offer to reschedule the teaching session later.

**Ans. (c) Assess the client's readiness to learn and address any barriers to learning**

**Explanation:** The nurse's first priority should be to assess the client's readiness and willingness to learn. If the client seems disinterested, it is essential to identify any barriers to learning and address them before proceeding with the education. This approach ensures that the information is delivered effectively and is applicable to the client's situation.

## Example Question

A nurse is providing education to a client with diabetes about self-monitoring blood glucose. The client states, "I am terrible at remembering things. I do not think I can do this." What is the nurse's best response?

- "Diabetes management is crucial. You need to find a way to remember."
- "Don't worry; I will remind you every day to check your blood glucose."
- "It is normal to feel overwhelmed. Let us discuss the strategies to help you remember."
- "If you can't remember, we might need to admit you to the hospital."

**Ans. (c) It is normal to feel overwhelmed. Let us discuss strategies to help you remember."**

**Explanation:** The nurse should acknowledge the client's concerns and offer to discuss strategies to help him remember to self-monitor his blood glucose. Option (a) may sound demanding and not empathetic, and Option (b) may foster dependency. Option (d) is an extreme response that is not warranted in this situation. Option (c) shows understanding and promotes problem-solving to address the client's concern effectively.

- Address normal growth and development:** For questions related to normal expected stages of growth and development, **consider the age and developmental milestones of the client.**

Nurses should be familiar with typical growth and developmental patterns to identify any deviations or concerns that may require intervention.

## Example Question

A nurse in the well-baby clinic assessing a 12-month-old infant. The infant's parent expresses concern about the child not walking yet. What is the nurse's best response?

- "Do not worry; all children develop at their own pace."
- "Your child should be walking by now. Let us discuss possible causes for the delay."
- "Walking typically starts between 10 and 15 months. Your child is still within the normal range."
- "It is concerning that your child is not walking yet. I will refer you to a pediatric specialist."

**Ans. (c) "Walking typically starts between 10 and 15 months. Your child is still within the normal range."**

**Explanation:** The nurse should provide reassurance by explaining that walking typically starts between 10 and 15 months, and the child is still within the normal range of development.

Option (a) is supportive, but option (c) provides more specific information about the typical age range for walking and addresses the parent's concern appropriately.

- Focus on preventive care:** Health Promotion and Maintenance questions may involve preventive care measures to avoid the development of health problems. Consider, how the nurse can proactively support a client in adopting healthy behaviors, such as promoting regular exercise, healthy eating habits, and adherence to recommended screenings and vaccinations.
- Be mindful of negative event queries:** Negative event queries are frequently used in health promotion and maintenance questions related to client education. These queries may present scenarios where a client lacks knowledge or understanding about a specific health-related topic. The nurse's role is to identify gaps in knowledge and provide appropriate education to improve the client's understanding and self-care abilities.

## Normal Vs Abnormal & Nursing Action Vs Physician Action

- Often, the scenario-based questions have options such as **"notify the physician"** or **"Document the findings"**. Understanding this strategy will help you to choose between these options.
- Understanding normal and abnormal physiological parameters and laboratory values will help solve many questions. As a nurse, you are expected to differentiate between normal and abnormal.

The following steps will help you to choose the appropriate options in scenario-based Question.

**Step 1:** Read the scenario carefully. Take your time to read the scenario thoroughly and understand the patient's condition, symptoms, and any other relevant information provided. Pay attention to vital signs, laboratory values, and the patient's chief complaints.

**Step 2:** Identify normal vs. abnormal parameters, once you have a clear understanding of the scenario, identify the physiological





parameters or laboratory values mentioned. Determine whether they fall within the normal range or if they are abnormal. You should have a good understanding of the typical reference ranges for various vital signs and lab values. (Refer to the Synopsis for the Normal values)

**Step 3:** Analyze the Severity of Abnormality, if you come across abnormal parameters. Some abnormal values may be slightly out of range and do not require immediate intervention. Others may indicate a more serious condition that needs prompt attention.

**Step 4:** Consider the nurse's scope of practice. If the scenario presents abnormal parameters that can be managed within the nurse's scope of practice, you can **consider implementing nursing interventions before notifying the physician**. Nursing interventions may include providing comfort measures, repositioning the patient, administering prescribed medications, or addressing other immediate needs based on your training and facility's policies.

**Step 5:** Determine if immediate physician notification is required. If the abnormality is severe and beyond the nurse's scope of practice, immediate notification of the physician or other relevant health care provider may be necessary.

**Step 6:** Consider the overall clinical condition. Assess the patient's overall clinical condition and any other pertinent factors that could influence your decision. These factors might include the patient's medical history, comorbidities, recent interventions, and responses to previous treatments.

**Step 7:** Choose the appropriate response. Based on your analysis of the scenario, select the most appropriate response from the available options.

If the parameters are within the normal range, you might choose to **Document the findings**. If the abnormality can be managed within the Nurse's scope of practice, you can choose to "Any of the nursing interventions given as options". If immediate physician intervention is necessary, you may choose to "Notify the physician."

### Example Question

#### Normal Findings

Nurse Ramya is assessing a male newborn following circumcision and observes that the circumcised area appears red with a slight amount of bloody drainage. What would be the most appropriate nursing action in this situation?

- Apply gentle pressure on the area
- Reinforce the dressing
- Document the findings
- Notify the physician

**Ans. (c) Document the findings**

**Explanation:** After circumcision, it is normal for the circumcised area to appear red and have a small amount of bloody drainage. This is a common and expected finding in the immediate postcircumcision period. By documenting these findings, the nurse is maintaining an accurate record of the newborn's condition, which is important for an ongoing assessment and communication among healthcare providers.

**STRATEGY:** Understand the normal Physiological and clinical Parameters. Understanding of the nurse that the redness and small amount of bloody drainage is normal findings after a circumcision procedure. This leads to the option (c) "Document the Findings".

Contd...

**When the respiratory rate of a 12-month-old child is 35 breaths/min, the most appropriate nursing action is:**

- Notify the physician
- Administer oxygen
- Reassess respiratory rate in 15 minutes
- Document the findings

**Ans. (c) Document the findings**

**Explanation:** The respiratory rate of a 12-month-old child is typically 30–60 breaths/min. So, a respiratory rate of 35 breaths/min is within the normal range. Therefore, the most appropriate nursing action in this situation is to document the findings.

**STRATEGY:** Understand the normal physiological and clinical parameters.

### Example Question

#### Abnormal Findings

A client is in active labor with twins and the cervix is 5 cm dilated. The nurse observes that contractions are occurring every 7 to 8 minutes in a 30-min period. The most appropriate action by the nurse would be to:

- Administer oxygen at 4 liters by mask
- Note the fetal heart rate patterns
- Notify the physician immediately
- Instruct the client to relax during the contractions

**Ans. (c) Notify the physician immediately**

**Explanation:** Given the scenario of a client in active labor with twins, a 5 cm dilated cervix, and contractions occurring every 7 to 8 minutes in a 30-min period, it is important to consider the possibility of hypotonic uterine contractions, which are characterized by weak and infrequent contractions that can slow down labor progress. The most appropriate nursing action would be to "Notify the physician immediately" (option c). Hypotonic uterine contractions can lead to labor complications, and the physician needs to be informed promptly so that appropriate interventions, such as administering oxytocin to augment contractions can be considered.

### Example Question

Infective endocarditis client developed sudden left leg pain with pallor, paresthesia, and a loss of peripheral pulses. Priority nursing action is:

- Elevate the leg to promote venous return.
- Apply constrictive elastic bandage
- Notify the physician
- Use blood blocks to elevate foot end

**Ans. (c) Notify the physician**

**Explanation:** The sudden onset of pain, pallor, paresthesia, and loss of peripheral pulses in a client with infective endocarditis are signs of a possible embolic event, such as a clot or vegetation breaking off from the heart and traveling to the leg. This is a serious medical emergency that requires immediate medical attention.

**STRATEGY:** Determine that "Immediate Physician Notification" is required if the abnormality is severe and beyond the nurse's scope of practice.



## DECODING THE CASE SCENARIO-BASED QUESTIONS

### Answering Complex Case Scenario-based Questions Using Clinical Judgment

All the strategies discussed above may help you solve a case scenario-based questions, however, there is no alternative to sound subject knowledge and clinical judgment of the situation.

The following points need to be carefully considered while solving complex case scenario-based questions.

- Read the question stem carefully and identify the key information, the client scenario and vital details.
- Identify the main issue in the question. The question stem may have too many details out of which the main issue needs to be identified. This will direct the test-taker to choose correct answer.
- Consider safety and prioritization: Read the options carefully and assess the urgency and potential risks associated with each option.
- Apply clinical knowledge: Use your knowledge of anatomy, physiology, pathophysiology, and pharmacology to make the best decision.
- Use your clinical judgment to weigh the risks and benefits of each option and make the best decision for the patient.
- Consider the patient's age, gender, and cultural background while making clinical judgment.

- Think about the setting in which the question is taking place (Emergency room, General ward, ICU, OT or Community setting). The response may vary depending on the setting.
- Use the process of elimination (as discussed above).



#### Negative Marking:

- Mathematically, with 1/4 negative marking, random guessing on a 4-option MCQ offers a small positive expected value of about 0.06 marks (1/16 marks) per question. If you can confidently eliminate two options, then your average expected gain rises significantly to about 0.375 marks per MCQ guessed.
- With 1/3 negative marking, random guessing does not improve your score on average (expected value is zero). However, if you can confidently eliminate two wrong options, your expected gain becomes notably positive, around 0.33 marks (1/3 mark) per MCQ guessed.
- **Note:** These figures reflect purely mathematical probabilities and are useful guidelines for making educated guesses while attempting MCQs in exams with negative marking. Nevertheless, there is no substitute for knowing the correct answer.



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**"A healthy outside starts from the inside."**

—Robert Ulrich



# ASSERTION & REASON TYPE QUESTIONS

## INTRODUCTION TO ASSERTION AND REASON

In this edition, a new format of multiple-choice questions—Assertion–Reason type MCQs—has been introduced. These questions consist of a statement of assertion followed by a statement of reason. The task of the candidate is to determine whether both statements are individually true and whether the reason correctly explains the assertion.

This type of question assesses not only factual knowledge but also analytical and logical reasoning skills. Considering the possibility that this format may be introduced in future examinations such as NORCET and ESIC, a sample set of Assertion–Reason questions has been included in this book to help aspirants familiarize themselves with the pattern.

For extended practice, a larger collection of Assertion–Reason type MCQs has been made available in the TARGET HIGH Digital Pro App, enabling learners to strengthen their skills and build confidence in handling this emerging question format.

- 1. Assertion (A): Osteoporosis is one of the common reasons for fractures in the elderly.**

**Reason (R): In osteoporosis, bones become brittle and less dense, making them more susceptible to breaking during falls or even with minor injuries.**

- Both A and R are true, and R is the correct explanation of A.
- Both A and R are true, but R is not the correct explanation of A.
- A is true, but R is false.
- A is false, but R is true.

**Explanation:** Osteoporosis is a common cause of fractures in older adults due to decreased bone mass with age, especially in postmenopausal women. It makes bones brittle and less dense, increasing the risk of fractures even with minor trauma.

- 2. Assertion (A): Carpal Tunnel Syndrome (CTS) is caused by compression of the median nerve.**

**Reason (R): The median nerve runs along the spiral groove of the humerus and supplies the extensor compartment of the arm and forearm.**

- Both A and R are true, and R is the correct explanation of A.
- Both A and R are true, but R is not the correct explanation of A.
- A is true, but R is false.
- A is false, but R is true.

**Explanation:** Carpal Tunnel Syndrome occurs when the **median nerve** is compressed, as it passes through the carpal tunnel, a narrow and rigid passageway in the wrist formed by bones and ligaments. This compression leads to symptoms such as pain, numbness, and weakness in the hand. The description provided in the 'Reason' refers to Radial nerve, not median nerve.

- 3. Assertion (A): The terms "Blue bloater" and "Pink puffer" are used to describe different presentations of chronic obstructive pulmonary disease (COPD).**

**Reason (R): "Blue bloater" refers to emphysema patients who hyperventilate and appear flushed, while "Pink puffer" refers to chronic bronchitis patients with low oxygen levels and cyanosis.**

- Both A and R are true, and R is the correct explanation of A.
- Both A and R are true, but R is not the correct explanation of A.
- A is true, but R is false.
- A is false, but R is true.

### Explanation:

The terms "Blue bloater" and "Pink puffer" were traditionally used for two clinical types of COPD.

- Blue bloater (Chronic bronchitis):** Excess mucus, hypoxemia, cyanosis, and fluid retention.
- Pink puffer (Emphysema):** Alveolar destruction, dyspnea, hyperventilation, and pink complexion due to near-normal oxygen levels.

So, the Reason is false.

- 4. Assertion (A): Clients with chronic obstructive pulmonary disease (COPD) are typically advised to use pursed-lip breathing.**

**Reason (R): Pursed-lip breathing prolongs exhalation, prevents airway collapse, and reduces air trapping.**

- Both A and R are true, and R is the correct explanation of A.
- Both A and R are true, but R is not the correct explanation of A.
- A is true, but R is false.
- A is false, but R is true.



**Ans.**

- a
- c
- c
- a



**"Our bodies are our gardens—our wills are our gardeners."**  
—William Shakespeare



# MATCH THE FOLLOWING TYPE QUESTIONS

## 1. Match the following Clinical signs with their Descriptions.

Clinical sign	Description
1. Rovsing's sign	A. Acute cholecystitis
2. Murphy's sign	B. Acute appendicitis
3. Obturator sign	C. Retrocecal appendicitis
4. Psoas sign	D. Pelvic appendicitis

- a. 1-B, 2-A, 3-D, 4-C  
b. 1-C, 2-A, 3-D, 4-B  
c. 1-B, 2-C, 3-D, 4-A  
d. 1-A, 2-B, 3-C, 4-D

### Explanation:

- Rovsing's sign:** Pain is elicited in the right lower quadrant when the left lower quadrant is palpated. It is seen in acute appendicitis.
- Murphy's sign:** Inspiration is arrested due to pain when the right upper quadrant is palpated. It is seen in acute cholecystitis.
- Obturator sign:** Pain is felt in the right lower quadrant when the flexed right hip is internally rotated. It is seen in pelvic appendicitis.
- Psoas sign:** Pain is felt in the right lower quadrant when the right thigh is extended while the patient lies on the left side. It is seen in retrocecal appendicitis.

## 2. Match the following Nursing theorists with the Theories they proposed.

Theorists	Theory
1. Florence Nightingale	A. Self-Care Deficit Theory
2. Virginia Henderson	B. Environmental Theory
3. Dorothea Orem	C. Need Theory
4. Hildegard Peplau	D. Interpersonal Relations Theory

- a. 1-D, 2-A, 3-C, 4-B      b. 1-C, 2-A, 3-D, 4-B  
c. 1-B, 2-C, 3-A, 4-D      d. 1-B, 2-A, 3-D, 4-C

## 3. Match the following Respiratory conditions with the Correct definitions.

Condition	Description
1. Pneumonia	A. Inflammation of bronchial tubes
2. Atelectasis	B. Destruction of alveolar walls and air trapping
3. Bronchitis	C. Infection causing alveolar inflammation and consolidation
4. Emphysema	D. Collapse of part or all of a lung

- a. 1-B, 2-A, 3-D, 4-C      b. 1-A, 2-D, 3-C, 4-D  
c. 1-D, 2-C, 3-B, 4-A      d. 1-C, 2-D, 3-A, 4-B

## 4. Match the following Insulin names with the Type they are.

Insulin name	Type of insulin
1. Lispro	A. Long-acting insulin
2. Regular insulin	B. Rapid-acting insulin
3. Neutral Protamine Hagedorn	C. Intermediate-acting insulin
4. Glargine	D. Short-acting insulin

- a. 1-C, 2-D, 3-A, 4-B      b. 1-A, 2-B, 3-C, 4-D  
c. 1-B, 2-D, 3-C, 4-A      d. 1-C, 2-D, 3-A, 4-B

### Explanation:

- Lispro:** Rapid-acting insulin, starts in 15 minutes, used before meals.
- Regular insulin:** Short-acting, starts in 30–60 minutes, used around meals.
- NPH:** Intermediate-acting insulin, covers blood sugar between meals and overnight.
- Glargine:** Long-acting insulin, provides steady 24-hour blood sugar control.

## 5. Match the following Imbalance with their Deficient electrolytes.

Imbalance	Deficient electrolyte
1. Hypokalemia	A. Sodium
2. Hyponatremia	B. Calcium
3. Hypocalcemia	C. Potassium
4. Hypomagnesemia	D. Magnesium

- a. 1-C, 2-A, 3-B, 4-D      b. 1-A, 2-C, 3-D, 4-B  
c. 1-A, 2-C, 3-B, 4-D      d. 1-D, 2-C, 3-A, 4-B

### Explanation:

- Hypokalemia:** Low potassium levels in the blood.
- Hypocalcemia:** Deficiency of calcium in the bloodstream.
- Hypernatremia:** Elevated sodium levels, often due to dehydration.
- Hypomagnesemia:** Low levels of magnesium, affecting neuromuscular function.

## 6. Match the following Fractures with their Descriptions.

Fracture type	Description
1. Green stick fracture	A. Distal radius
2. Galeazzi fracture	B. Radius fracture with distal radio ulnar joint dislocation
3. Pott's fracture	C. Ankle fracture
4. Colles' fracture	D. Fracture of long bone in children

- a. 1-D, 2-B, 3-C, 4-A      b. 1-A, 2-C, 3-D, 4-B  
c. 1-B, 2-D, 3-A, 4-C      d. 1-C, 2-A, 3-B, 4-D



### Ans.

1. a  
2. c  
3. d  
4. c  
5. a  
6. a



# Video-Based Questions (VBQs)



Video Based Questions

GO PREMIUM

1. Which of the following procedure is being performed in the video?



- Ortolani and Barlow test
- Anterior drawer test
- Lachman test
- Flexion rotation drawer test

5. The procedure being performed in the video is:



- Pulmonary function test
- Incentive spirometry
- Alcohol breath test
- Urea breath test

2. Which of the following procedure is being performed in the video?



- NG tube insertion
- OG tube insertion
- Sengstaken-Blakemore tube insertion
- Guedel's airway insertion

6. The nasal clip used during the procedure shown in the video is to:



- Avoid drainage of nasal secretion during the procedure
- Achieve a tight seal of the airway
- Improve patient comfort during the procedure
- Prevent sneezing during procedure

3. All among the following are the advantage of the procedure shown in the video; EXCEPT:



- Minimize aerosol generation
- Less chance for cross infection
- Apply negative pressure throughout the respiratory cycle
- Maintain PEEP throughout the respiratory cycle

7. The device shown in the video is:



- Jet nebulizer
- Mask nebulizer
- Ultrasonic nebulizer
- Steam inhalation device

4. The specimen collection shown in the videos is for:



- RT-PCR
- Rapid antigen test for COVID
- Sputum culture and sensitivity test
- Both a & b

8. The instrument used for the measurement of Mid-Upper Arm Circumference shown in the video is:



- Shakir tape
- Stadiometer
- Edtape
- Gulick tape



Ans.

- a
- b
- c
- d
- a
- b
- c
- a

**"Take care of your body. It's the only place you have to live."**

—Jim Rohn



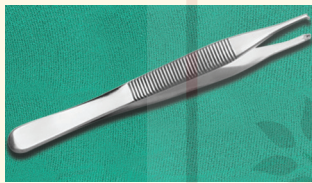
# INSTRUMENTS AND DEVICES

## 1. INSTRUMENTS

### Name, Description and Image of the Instruments/Devices

#### Adson thumb forceps

- For holding and manipulating delicate tissues.



#### Babcock forceps

- Used to grasp delicate tissue in laser procedures. They are frequently used with intestinal and laparotomy procedures.



#### Allis tissue forceps

- Allis tissue forceps are used for grasping organs and slippery or dense tissue during electrosurgery.



#### Vulsellum

- Used in gynecological operations to hold the tip of cervix.
- This structure is similar to Allis forceps except they are very long.



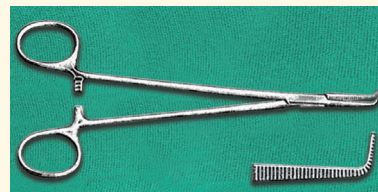
#### Artery forceps

- Used for grasping, compressing, and holding the end of an artery during ligation.



#### Right-angled artery forceps

- To isolate, encircle and ligate vessels or ducts, especially those present in depths.



#### Kocher's Forceps

- To hold securely superior thyroid pedicle vessels.
- Hold retracting cut ends of vessels in tough fibrous tissue.
- Hold ribs during rib resection.
- To cause artificial rupture of gestational membrane.



#### Cautery or electrocautery

- Removal of unsightly warts.
- To burn or coagulate the specific area of tissue.



Contd...





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SECTION

**A**

## Subject-wise Synopsis CBQs, IBQs & MCQs

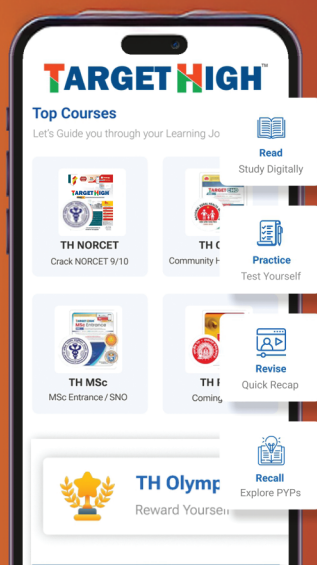
### SUBJECTS COVERED

- Fundamentals of Nursing
- Medical Surgical Nursing/Adult Health Nursing (Including Anatomy & Physiology)
- Pharmacology
- Community Health Nursing
- Psychiatric Nursing
- Pediatric Nursing
- Obstetric and Gynecological Nursing
- Applied Microbiology
- Applied Biochemistry and Nutrition
- Applied Sociology and Psychology
- Nursing Research and Statistics
- Nursing Education/Educational Technology
- Nursing Administration and Management
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# FUNDAMENTALS OF NURSING

## SYNOPSIS

- The term 'nursing' has been derived from a Latin word 'nurtix' which means to nourish.
- Definition of nursing by Virginia Henderson—"The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery (or to peaceful death) that he would perform unaided if he had the necessary strength, will or knowledge".
- Definition of nursing by the American Nurses Association (ANA)— "Protection, promotion, and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, communities, and populations".

### MILESTONES OF NURSING IN INDIA

1871	The first school of nursing with 4 students was started in Government General Hospital, Madras (now Chennai) with 6 months Diploma in Midwives' Program.
1908	The Trained Nurses' Association of India (TNAI) was formed.
1926	Madras state (now Tamil Nadu) formed first registration council to provide basic standards in education and training.
1946	The first 4 years' bachelor's degree program was established at RAK College of Nursing in New Delhi and Christian Medical College, Vellore, Tamil Nadu
1947	The Indian Nursing Council Act was passed by ordinance on December 31.
1948	Nursing Council Act came into existence in 1948 to constitute a council of nurses.
1949	The Indian Nursing Council constituted under the Indian Nursing Council Act, 1947.
1959	First master's nursing course of 2 years duration started at RAK College of Nursing, New Delhi.
1986	MPhil in Nursing was started by RAK College of Nursing, Delhi.
1992	Doctoral program in nursing was started by RAK CON under Department of Nursing, University of Delhi.
2017	Indian Nursing Council launched nurse practitioner in critical care nursing program.
2023	The National Nursing and Midwifery Commission Bill 2023 (NNMC 2023) was passed in Lok Sabha on July 28. NNMC was passed in Rajya Sabha on August 8, 2023.

### FLORENCE NIGHTINGALE'S CONTRIBUTION TO NURSING

- Florence Nightingale was born in Florence, Italy on May 12, 1820 and died on August 13, 1910.
- Every year, International Nurses Day is celebrated on 12th May.
- She developed first organized nursing program for nurses in the year 1860.
- She started her program in the Nightingale Training School for Nurses at St. Thomas' Hospital in London.
- She volunteered herself during Crimean War in the year 1853.
- She is known as "**Lady with the Lamp**" for taking care of soldiers with lamp at night.

#### KEY POINTS

- Florence Nightingale defined nursing as "**the art of utilizing the environment of patients to assist them in their recovery**".
- **Environment** is the focus of nursing care in Nightingale's theory.

## BASIC CHARACTERISTICS OF A PROFESSION

- Specialized education
- Body of knowledge
- Continuous research activity
- Service orientation
- Code of professional ethics
- Autonomy
- Professional organization

## DIFFERENT ROLES OF NURSES

TABLE 1 ROLE OF NURSES	
Role	Description
Autonomy and accountability	<ul style="list-style-type: none"> <li>• Nurse should be able to initiate independent nursing action without medical orders within the scope of practice. E.g., initiation of cold sponging to a patient with fever.</li> <li>• Nurse is always responsible and answerable for the quality of care provided to the patient.</li> </ul>
Caregiver	Caregiver helps the patient achieve maximum level of functioning independently by providing good care.
Advocate	Defends the patient's right to be treated equally without any harm intentionally or unintentionally.
Educator	<ul style="list-style-type: none"> <li>• Nurse educates the patient about the disease process and its management.</li> <li>• Nurse demonstrates and educates patients on health-related activities and promotes healthy lifestyle.</li> </ul>
Communicator	Communicator role is an integral part of a good relationship. Nurse communicates to the patient about disease process, its management and progress.
Manager	Nurse managers are responsible for managing nurses within a healthcare environment and are responsible for creating an environment that promotes a culture aimed at enhancing the quality of life for patients.
Researcher	Investigates the role of nurses which further improves on nursing practice.

## TRENDS IN NURSING

TABLE 2 TRENDS IN NURSING	
Trends	Descriptions
Evidence-based practice	To provide high-quality nursing care through evidence-based practice.
Quality and safety education for nurses	Provide regular education to stay updated with healthcare changes.

Contd...

Trends	Descriptions
New technologies	Emerging technologies that contribute to sophisticated diagnostic and treatment modalities, development of e-health and tele medicine, etc.
Genomics	It is the study of inheritance and nurses should use these study findings ethically and for the betterment of humankind.
Public perception of nursing	Nowadays, public is aware about the consumer rights and rights of a patient. Always provide high-quality competent care to the patient to avoid medical errors.

## NURSING PROGRAMS IN INDIA

TABLE 3 NURSING PROGRAMS IN INDIA		
Name of the program	Duration	Basic qualification
Auxiliary Nurse Midwife	6 months and 18 months internship	10+2
GNM	3 years and 6 months	10+2
BSc Nursing	4 years	10+2 Science
Post Basic Nursing	2 years	GNM
MSc Nursing & Nurse Practitioner in Critical Care (NPCC)	2 years	BSc Nursing or Post Basic Nursing with 1 year of experience (INC criteria) Note: AIIMS does not require 1 year experience.
MPhil Nursing	1 year course for regular candidate and 2 years course for part-time candidate	MSc in nursing (Note: MPhil course is abolished as per new NEP)
PhD Nursing	3 years—full time 5 years—part time	<ul style="list-style-type: none"> <li>• MSc Nursing is essential qualification.</li> <li>• 3 years of experience after MSc Nursing for National Consortium for PhD in Nursing.</li> <li>• Other Universities have their own criteria but MSc Nursing is essential.</li> </ul>





## Thermometers

Thermometers are the instruments used to measure the temperature.

### DIFFERENT TYPES OF THERMOMETER ALONG WITH THEIR PICTURES

Glass thermometer  
Or  
Mercuric thermometer



Electronic thermometer



Digital thermometer



Tympanic thermometer

**Note:** Cerumen (ear wax) impaction can affect tympanic temperature values by as much as 0.3°F lower than the unobstructed ear.

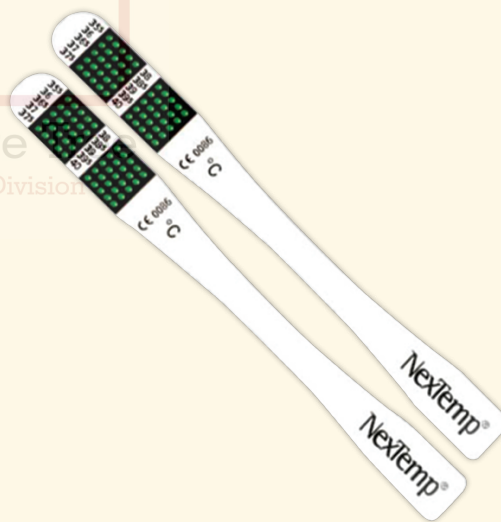


Noncontact digital infrared thermometer  
(Forehead thermometer)

**Note:** To use forehead thermometer, the environmental temperature should be between 60.8°F and 104°F (16°C and 40°C) and relative humidity below 85%.



(Disposable thermometer strip)

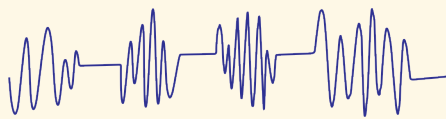


**Note:**

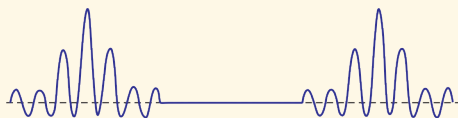
- Have patient open mouth and place the grid end of the thermometer far back in mouth under tongue.
- After at least 60 seconds has elapsed, remove thermometer from patient's mouth.

Contd...

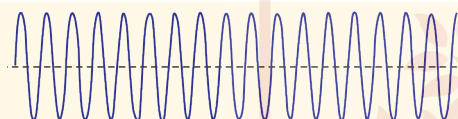




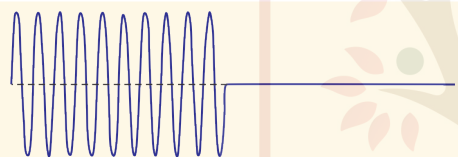
**Biot's respiration** [Deep breathing with periods of sudden pauses]  
**Causes:** Meningitis, brainstem damage, head injury



**Cheyne-Stokes** (cycles of varying depth and rate of breathing). It has a crescendo-decrescendo pattern)  
**Causes:** Stroke, traumatic brain injury, brain tumors, decompensated congestive heart failure



**Kussmaul's respiration** [Fast and deep breath]  
**Causes:** Diabetic ketoacidosis (DKA), kidney failure



**Central sleep apnea** [Apnea during sleep]  
**Causes:** Heart failure, kidney failure

## KEY POINTS

- The sequence of vital signs assessment in newborn is respiratory rate, pulse and temperature.
- Always count the pulse for one full minute.
- Paradoxical respiration is seen in flail chest due to **Blunt Chest Trauma**.

## Blood Pressure

- Blood pressure is the force exerted by the blood against the wall of the artery.
- Systolic blood pressure (SBP):** Maximum pressure exerted by blood on the blood vessel during left ventricular contraction (ejection).
- Diastolic blood pressure (DBP):** Pressure exerted by blood on the wall of the artery during diastole (resting and filling) of the heart.
- Pulse pressure:** Difference between systolic and diastolic pressure. Normal range is 30-50 mm Hg.
- While measuring BP, the sounds heard are known as Korotkoff sounds.
- Normal blood pressure:** 120/80 mm Hg.

## Factors Affecting BP

- BP increases
  - As the cardiac output increases
  - As the peripheral vascular resistance increases
  - As the viscosity or hematocrit increases

- As the elasticity of blood vessel **decreases**
- When smoking
- During stress and anxiety
- During acute pain
- After puberty, males tend to have higher BP than females of similar age.
- After menopause, females tend to have higher BP than males of similar age.

## Abnormal BP

TABLE 16 ABNORMAL BP			
Blood pressure category	SBP (mm Hg)		DBP (mm Hg)
Normal	<120	and	<80
Elevated BP	120–129	and	<80
Hypertension Stage–I	130–139	or	80–89
Hypertension Stage–II	≥140	or	>90
Hypertensive Crisis	>180	and/or	>120

Ref: American Heart Association

- Orthostatic hypotension:**
  - It is also known as postural hypotension.
  - It refers to a sudden drop in blood pressure when a person changes from lying down to sitting or standing up position.
  - It is diagnosed when SBP falls 20 mm Hg or more or DBP falls 10 mm Hg or more within 3 minutes of position change.

## Mean Arterial Pressure

- It is the average arterial pressure during the cardiac cycle.
- MAP > 60 mm Hg is enough to maintain organ perfusion.
- MAP = 70–110 mm Hg

## Points to remember

### Calculation of Mean Arterial Pressure

There are two methods:

#### Method 1

Mean Arterial Pressure (MAP) =  $DBP + \frac{1}{3} (SBP - DBP)$

Where, SBP – Systolic Blood Pressure and DBP – Diastolic Blood Pressure.

For example, if the SBP = 120 mm Hg and DBP = 75 mm Hg, the MAP is:

$$\begin{aligned} \text{MAP} &= 75 + \frac{1}{3} (120 - 75) \\ &= 75 + 45/3 \\ &= 75 + 15 \\ &= 90 \end{aligned}$$

#### Method 2

Mean Arterial Pressure (MAP) =  $\frac{SBP + (2 \times DBP)}{3}$

For example, if the SBP = 120 mm Hg and DBP = 75 mm Hg, the MAP is

$$\begin{aligned} \text{MAP} &= \frac{120 + (2 \times 75)}{3} \\ &= (120 + 150)/3 \\ &= 270/3 \\ &= 90 \end{aligned}$$



## Recent Update

### National Nursing and Midwifery Commission (NNMC) Bill:

- The Government of India passed the NNMC Bill, 2023 on July 24, 2023 in the Lok Sabha.
- The NNMC Bill aims to set up National Nursing and Midwifery Commission (NNMC), and will repeal the Indian Nursing Council Act, 1947, to streamline nursing education in India.
- The Central Government shall establish three Autonomous Boards under the overall supervision of the National Commission to carry out specific functions as per this Act. These boards are:
- The Nursing and Midwifery Undergraduate and Postgraduate Education Board
- The Nursing and Midwifery Assessment and Rating Board
- The Nursing and Midwifery Ethics and Registration Board



## GOLDEN POINTS to Remember



### GOLDEN POINTS

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- ➔ **Maslow's hierarchy of needs** prioritizes **physiological needs** (e.g., airway, breathing, circulation) over all others.
- ➔ **Advance directives** are legal documents that include **living wills** and **durable power of attorney for healthcare**.
- ➔ The **Nurse Practice Act** in each state defines the **scope of nursing practice** and protects public health.
- ➔ **Informed consent** must be obtained by the **provider** performing the procedure, not the nurse.
- ➔ If a patient refuses treatment, the nurse must **document the refusal** and notify the provider immediately.
- ➔ The **"5 Rights" of delegation**: Right task, Right circumstance, Right person, Right direction/communication, Right supervision.
- ➔ **Nonmaleficence** is an ethical principle that obliges one to not inflict intentional harm (to do no harm).
- ➔ **Intentional torts** include assault, battery, false imprisonment, intentional infliction of emotional distress, libel, slander and trespassing.
- ➔ **Beneficence**: Doing good for patients and providing benefit balanced against risk.
- ➔ **Fidelity**: Being loyal and faithful to commitments and accountable for responsibilities.
- ➔ **Veracity**: Telling the truth and not intentionally deceiving or misleading patients.
- ➔ **Slander** refers to the crime of making a false spoken statement damaging to a person's reputation.
- ➔ A patient whose life is threatened and who is comatose is presumed to have given **implied consent**.
- ➔ Heat loss due to contact with circulating air movement is known as **convection**.
- ➔ Transfer of heat from one object to other without contact is known as **radiation** (60% heat loss from skin is through radiation).
- ➔ Normal **oral temperature** is **98.6°F (37°C)**.
- ➔ Normal **axillary temperature** is **97.6°F (36.4°C)** [1°F lesser than oral temperature].
- ➔ Normal **rectal temperature** is **99.6°F (37°C)** [1°F higher than oral temperature].
- ➔ **Hypothermia**—Temperature <95°F.
- ➔ **Hyperthermia**—Temperature up to 105°F.
- ➔ **Hyperpyrexia**—Temperature >105°F.
- ➔ Rectal temperature is the most reliable method to assess core temperature.
- ➔ To assess rectal temperature, the thermometer is inserted 1.5 inches in adults and 1 inch in children. Position – Left lateral.
- ➔ Wipe the thermometer from **bulb to stem** with **moist swab before taking temperature**.
- ➔ Wipe the thermometer from **stem to bulb** with a **dry swab after taking temperature**.
- ➔ **Relapsing fever**: Fever episodes are separated by intervals of normal temperature for days or weeks.
- ➔ **Lysis**: Temperature falls in a zigzag manner (step-ladder pattern).
- ➔ **Crisis**: Sudden return of temperature to the normal range from a very high temperature.
- ➔ **Rigor**: Sudden rise in body temperature with shivering as seen in malaria.
- ➔ **Inverse fever**: Temperature rises in the early morning rather than in the evening.
- ➔ Increased depth of breathing with normal respiratory rate is called **hyperpnea**.
- ➔ **Cheyne-Stokes Respiration** is characterized by alternating periods of tachypnea and apnea.
- ➔ **Kussmaul respiration** (air hunger) is associated with severe metabolic acidosis and diabetic ketoacidosis.
- ➔ Always count the pulse for one full minute.
- ➔ **Pulse pressure** refers to the difference between systolic blood pressure and diastolic blood pressure.
- ➔ Pulse Pressure = Systolic Blood Pressure – Diastolic Blood Pressure
- ➔ Width of the cuff should be 40% of the arm circumference and length of the cuff should be 80% of the **arm circumference**.
- ➔ A **blood pressure cuff** that is too large will give falsely low reading of BP.
- ➔ A **blood pressure cuff** that is too small will give falsely high reading of BP.
- ➔ Movement of an extremity away from the body midline is called **abduction**.
- ➔ **Adduction**: Moving toward midline of the body.
- ➔ **Extension**: Straightening a joint.

Contd...



"The greatest wealth is health."

—Virgil



# CLINICAL CASE-BASED QUESTIONS

1

New Question 2025-26

A client is brought to the emergency department with the complaint of abdominal pain. Nurse Linda recorded vital signs of the client. What phase of nursing process is done by the nurse here?

- a. Assessment
- b. Planning
- c. Implementation
- d. Evaluation

Ans. (a) **Assessment**

**Explanation:** Monitoring vital signs help to obtain information related to client. So this is considered an assessment of the client.

2

New Question 2025-26

A nurse has received 34-year-old male patient from the OPD with the chief complaints of allergic rhinitis, including episodic cough, wheeze, itchy red watery eyes and a runny, itchy nose. Patient had a history of Asthma since 2015. After performing the initial assessment, which type of health assessment will the nurse perform?

- a. Comprehensive Health Assessment
- b. Focused Health Assessment
- c. Episodic Health Assessment
- d. Emergency Health Assessment

Ans. (b) **Focused Health Assessment**

**Explanation:** A focused health assessment is performed when a patient presents with specific symptoms or health concerns, particularly when the condition is already known, and targeted data is required.

3

New Question 2025-26

A first aid rescuer provides hands-only CPR to a victim who collapsed in front of him outside a coffee shop. Which legal principle supports the rescuer from being successfully sued for wrongdoing?

- a. Statutory law
- b. Misdemeanor
- c. Good Samaritan laws
- d. Administrative law

Ans. (c) **Good Samaritan laws**

**Explanation:** Good Samaritan laws protect people who help others in an emergency from being sued for wrongdoing.

4

New Question 2025-26

A nurse is caring for a bedridden patient who is at risk of hip external rotation due to his position in bed. The nurse wants to implement a comfort device to prevent this external rotation

of the hips. Which of the following comfort devices should the nurse use?

- a. Trochanter rolls
- b. Hand roll
- c. Trapeze roll
- d. Sandbags

Ans. (a) **Trochanter rolls**

**Explanation:** Trochanter rolls are used to prevent external rotation of the hip in bedridden patients. They are placed from the lateral aspect of the hip to the mid-thigh to keep the leg in proper alignment. This is especially important in patients on prolonged bed rest or those recovering from hip surgery or stroke.

5

New Question 2025-26

You have measured the body temperature of your assigned patient and found that the patient is febrile. You have instructed the patient that they may lose body heat through perspiration. The patient then asks the nurse about the mechanism of heat loss that occurs in this condition.

- a. Conduction
- b. Convection
- c. Evaporation
- d. Radiation

Ans. (c) **Evaporation**

**Explanation:** Evaporation occurs when sweat is produced by the sweat glands and comes into contact with the skin's surface. As the sweat evaporates, it absorbs heat from the body, leading to cooling.

6

New Question 2025-26

You went into the patient's room to monitor the patient's vital signs, and noticed that the patient was holding a hot cup of coffee in his hand. You informed the patient that you have to monitor his body temperature. Patient replied, "Ok! Sure, I have almost finished my coffee". Select the most appropriate response made by the nurse in this situation?

- a. The nurse waits for 30 minutes, then after that monitors the oral body temperature.
- b. The nurse will ask the patient to gargle his mouth with water and apply the thermometer.
- c. The nurse will check the other vital signs first, then check the oral temperature.
- d. The nurse will inform the patient that the temperature will be checked in next shift.

Ans. (a) **The nurse waits for 30 minutes, then after that monitors the oral body temperature.**

**Explanation:** To obtain a reliable body temperature measurement, it is necessary to wait until the patient's oral cavity has cooled down from the hot coffee. Waiting for approximately 30 minutes allows sufficient time for the mouth to return to a normal temperature before taking the oral temperature.

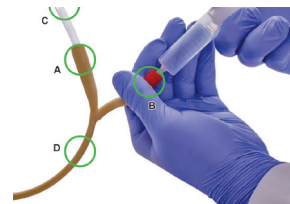
# ? Image-Based Questions

1. Identify the labeled part 'A' in the image of the AMBU bag shown here. (NORCET-8 2025)



- a. Self-inflating bag  
b. Oxygen inlet port  
c. Oxygen reservoir bag  
d. Face mask connector

5. In order to aspirate urine for urine analysis or culture examination of a patient diagnosed with CAUTI, which of the following points should be considered as per the given image? (NORCET-8 2025)



- a. A  
b. B  
c. C  
d. D

2. Identify the image given here. (NORCET-8 2025)



- a. Nasogastric tube (Ryle's tube)  
b. Foley catheter  
c. Gastrostomy tube  
d. Endotracheal tube

6. Identify the given image: (NORCET-6 2024)



- a. LMA  
b. Nasopharyngeal airway  
c. Supraglottic airway  
d. None of the above

3. Identify the technique used for holding the mask in bag-valve-mask ventilation as shown in the image. (NORCET-8 2025)

- a. CE technique  
b. E-C clamp technique  
c. Hook technique  
d. Two-hand thenar eminence technique



7. What is the ideal route for the administration of the medication shown in the below given image? (NORCET-6 2024)

- a. Subcutaneous  
b. Intramuscular  
c. Intradermal  
d. Peripheral line



4. Identify the type of catheter as shown in the image. (Equipment used in drug administration) (NORCET-8 2025)



- a. CVC (Central Venous Catheter)  
b. PICC Line (Peripherally Inserted Central Catheter)  
c. Arterial Line  
d. Foley Catheter

8. Identify the image given here. (NORCET-5 2023)



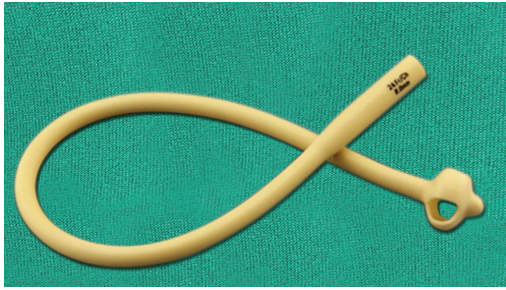
- a. Cuff manometer  
b. Glucometer  
c. Suction bottle  
d. Barometer



Ans.

1. c
2. c
3. c
4. a
5. d
6. b
7. d
8. a

65. What is the name of this catheter?



- a. Malecot
- b. Foley
- c. Sengstaken
- d. Hudd

66. Which one of the following statements is TRUE regarding this instrument? (Refer to the explanation at the end)



- a. Prevents the tongue from falling on posterior pharyngeal wall or epiglottis
- b. It is called Berman oral airway
- c. Best inserted during a seizure to prevent tongue bite
- d. Inserted into the mouth with concavity toward the tongue

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## Explanations of Image-Based Questions

32. Ans. (a) **Blue**

A light blue Vacutainer tube is commonly used to collect blood samples for coagulation tests. The light blue-top tube contains sodium citrate, an anticoagulant that is specifically used for coagulation studies. Sodium citrate prevents blood from clotting by binding calcium ions, which are necessary for the coagulation cascade to occur. By preserving the blood sample in an anticoagulated state, it allows accurate measurement of clotting factors and clotting times during coagulation testing.

33. Ans. (b) **Mitten restraint**

A soft mitt prevents the patient from being able to grasp things, but they are still able to move their arms. Soft wrist and ankle restraints may be used to prevent a patient from interfering

with cares, such as pulling at an IV or other tubes or removing a dressing.

35. Ans. (b) **Hot air oven**

The most effective and commonly used method of sterilization of glassware is dry heat treatment using hot air oven. On exposing the glassware to dry heat, the inhibition of growth occurs due to denaturation of proteins and oxidation of biomolecules.

66. Ans. (a) **Prevents the tongue from falling on posterior pharyngeal wall or epiglottis**

Guedel airway (**Image**) is the MC type of airway used for preventing tongue from falling back on the posterior pharyngeal wall



**Ans.**

- 65. a
- 66. a



**"Sometimes the remedy is worse than the disease."**

—Francis Bacon



# MULTIPLE CHOICE QUESTIONS (Including Explained and Practice Questions)

## DEFINITION OF NURSING

- Which of the following phrases best describes 'the science of nursing'?
  - Application of clinical skills
  - Holistic approach in patient care
  - Body of nursing knowledge
  - Art of specialized nursing care
- "The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery". This definition of nursing is stated by:
  - Florence Nightingale
  - Dorothea Orem
  - Virginia Henderson
  - Callista Roy
- "The act of assisting others in the provision and management of self-care to maintain or improve human functioning at the home level of effectiveness". The given statement regarding the nursing profession is proposed by:
  - Florence Nightingale
  - Dorothea Orem
  - Virginia Henderson
  - Callista Roy
- The definition given by Florence Nightingale mainly focuses on:
  - Love and affection
  - Evidence based practice
  - Reliable and valid care
  - Utilizing the environment for recovery
- "Nursing encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings." Which of the following has given this definition regarding the nursing profession organization in the year of 2002?
  - INC
  - WHO
  - TNAI
  - ICN
- Which of the following agency defines the nursing and its values as "Nursing is the protection, promotion, and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response"?
  - World Health Organization
  - Indian Nursing Council
  - American Nurse Association
  - International Council of Nurses
- Adaptation Model of Nursing with Five major needs for human physiology was developed by the Sister:
  - Callista Roy
  - Betty Neumann
  - Dorothea Orem
  - Henderson
- The Word "Nurse" is derived from the Latin word "Nutrix" which refers to the actual meaning of:
  - Care
  - Cure
  - Nourish
  - Nutritious

- The Knowledge-based Nursing practices and core skills for this profession mainly depend on the:

- Reporting and documentation
- Research and analysis
- Diagnosis, intervention and evaluation
- History collection and assessment

**Explanation:** By performing the appropriate diagnosis for a condition and treating the condition with the appropriate intervention and evaluating the result will enhance the knowledge-based practice and limit the occurrence of error.

- International Council for Nurses was first established in the year of:

- 1899
- 1908
- 1923
- 1945

## HISTORY OF NURSING

- Who decreased mortality by improving sanitation in the battlefields, resulting in a decrease of illness and infection? (SCTIMS [NO] 2023)

- Florence Nightingale
- Clara Barton
- Dorothea Dix
- Lillian Wald

- The first school of nursing was established by: (AIIMS Raipur Grade II 2017)

- Virginia Henderson
- Theodor Fliedner
- Florence Nightingale
- Isabel Hampton

**Explanation:** In 1836, Pastor Theodor Fliedner established the Kaiserswerth School for Nursing in his parish in Kaiserswerth, Germany. It was one of the first formal established schools of nursing in the world. Florence Nightingale established St. Thomas' Hospital and the Nightingale Training School for Nurses in 1860.

- International day for nurses is celebrated on:

- December 1
- May 12
- June 2
- May 1

**Explanation:** International Nurses Day is celebrated on May 12, which is the birth day of Florence Nightingale.

- Florence Nightingale was born on:

- May 12th 1820
- May 12th 1832
- April 7th 1820
- June 7th 1842

- In 1860, Nightingale set up the first nursing training school at: (ESIC Chennai May 2012)

- St. Thomas' Hospital, London
- University of Edinburgh
- Petersburg, Virginia
- None of the above

Ans.

- c
- c
- b
- d
- d
- c
- a
- c
- c
- a
- a
- b
- b
- a
- a

16. ICM theme for International Nurses Day 2025 is ...
- Our Nurses. Our Future. The Economic power of care
  - Nurses: A voice to lead - A vision for future healthcare
  - Our Nurses. Our Future: Caring for nurses strengthens economies
  - Nurses: A voice to lead-Health for All

## Explanation:

The themes of International Nurses Day for last 7 years are given below:

2025	Our Nurses. Our Future. Caring for nurses strengthens economies
2024	Our Nurses. Our Future. The Economic Power of Care
2023	Our Nurses. Our Future
2022	Nurses: A voice to lead - Invest in Nursing and respect rights to secure global health
2021	Nurses: A voice to lead - A vision for future healthcare
2020	Nurses: A voice to lead - Nursing the World to Health

17. In which year, the Florence Nightingale award was instituted by Ministry of Health and Family Welfare, Govt of India?
- 1947
  - 1952
  - 1965
  - 1973

**Explanation:** The Ministry of Health and Family Welfare instituted the National Florence Nightingale Awards in 1973 to recognize the outstanding services rendered by nurses and nursing professionals to society. The award is presented annually on May 12th, which is celebrated as International Nurses Day in honor of Florence Nightingale, the founder of modern nursing.

## LEGAL AND ETHICAL ASPECTS IN NURSING

18. A systematic inquiry into principles of right and wrong conduct is known as: (AIIMS Bibinagar [Tutor] 2023)
- Ethics
  - Values
  - Law
  - Justice
19. The ethical theory that defines ethical behavior as acts that assure the greatest possible good for the greatest number of individuals is: (AIIMS Bibinagar [Tutor] 2023)
- Ethical relativism
  - Utilitarianism
  - Egoism
  - Ethical formalism
20. The body of legal principles that has evolved from court decisions is known as: (AIIMS Bibinagar [Tutor] 2023)
- Constitutional law
  - Statutory law
  - Administrative law
  - Common law
21. The principle of fairness is known as: (SCTIMS [NO] 2023)
- Advocacy
  - Autonomy
  - Justice
  - Accountability

22. Mr. Nanda Kishore Yadav, a 52-year-old, was admitted with a stab injury due to communal riots and undergoes a cholecystectomy and is being discharged after recovery. Since he is an employee of a private company and the bill will be cleared from the company, the company is demanding access to his case file. The most appropriate action of the nurse will be to: (UPUMS [NO] 2023)
- Inform the company that the access of the health records can be provided only to his relatives
  - Refuse access to his health records
  - Inform the company to obtain permission from the hospital authorities to provide access to the health records
  - Provide access to his health records
23. A nurse injects a small amount of an antibiotic intradermally/subcutaneously and observes for hypersensitivity reaction. Which of the following ethical terms best describes this act? (UPUMS [NO] 2023)
- Beneficence
  - Nonmaleficence
  - Justice
  - Autonomy

## Explanation:

- The nurse is performing a skin test (like a penicillin skin test) to check for a hypersensitivity reaction before administering a full dose of an antibiotic. This is done to prevent harm to the patient, such as a severe allergic reaction (e.g., anaphylaxis).
- The ethical principle of nonmaleficence means "do no harm". It involves avoiding actions that could cause harm or risk of harm to the patient. By testing for hypersensitivity, the nurse is taking precautions to minimize the risk of a harmful reaction, which aligns with nonmaleficence.
- Beneficence (a) refers to promoting good or acting in the best interest of the patient (e.g., providing a treatment that benefits them).
- Justice (c) refers to fairness and equitable distribution of resources.
- Autonomy (d) respects the patient's right to make their own decisions.

24. Which of the following ethical principles refers to the duty not to harm? (SNEHP 2022)
- Beneficence
  - Nonmaleficence
  - Fidelity
  - Veracity
25. As per Indian Nursing Council norms for BSc nursing program, the size of the Hospital/Nursing Home for affiliation should not be less than: (Gujarat Nursing Service [NO/Principal] 2022)
- 100 beds
  - 30 beds
  - 150 beds
  - 250 beds
26. Truth-telling about the disease and its prognosis to terminally ill patients, in such situation which ethical principal is followed by a nurse? (Gujarat Nursing Service [NO/Principal] 2022)
- Confidentiality
  - Fidelity
  - Justice
  - Veracity
27. The means of protecting health information authorized by the individual is: (Gujarat Nursing Service [NO/Principal] 2022)
- Voting
  - Privacy
  - Admitting
  - Sorting



Ans.

- c
- d
- a
- b
- d
- c
- c
- b
- b
- a
- d
- b



# MEDICAL SURGICAL NURSING/ ADULT HEALTH NURSING (INCLUDING ANATOMY & PHYSIOLOGY)

## SYNOPSIS

### 1. INFLAMMATION AND WOUND HEALING

#### INFLAMMATION

Inflammation is a localized reaction intended to neutralize, control or eliminate the offending agent to prepare the site for repair.

#### Five Cardinal Signs of Inflammation

1. Redness
2. Warmth (heat)
3. Swelling
4. Pain
5. Loss of function

#### Point to remember

Fever is systemic response of inflammation.

#### Chemical Mediators

- Histamine, released by mast cells at the site of injury, causes vasodilation and vascular permeability.
- Kinins are responsible to attract neutrophils.
- Prostaglandins cause increased vascular permeability.

#### Three Phases of Inflammation

##### Phase 1: Inflammatory response (3–5 days)

- Transient vasoconstriction occurs immediately after injury, followed by vasodilation and increased capillary permeability, which results in redness, swelling and warmth.
- Exudate consists of plasma, plasma proteins, solutes, WBCs, etc., migrate into tissues, resulting in pressure of fluid on nerve endings (*pain and loss of function*).
- Leukocytes are responsible for engulfing offending organisms and removing cellular debris. (*phagocytosis by macrophages*).

##### Phase 2: Repair and Regeneration (2–8 weeks)

- It is characterized by new collagen formation.

- These fibers are laid down in disorganized manner to make scar tissue, but the links between fibers are weak. Thus, new tissue is susceptible to disruption on aggressive activity.

##### Phase 3: Remodeling and Maturation (Months to years)

- In this phase, tissue continues to remodel, strengthen and improve its cellular organization.
- Increase in organization of collagen fibers and bonds become stronger.

#### Exudate

The fluid involved in inflammatory edema is known as exudate.

- **Serous exudate:** Water-like exudate; seen in minor injury
- **Fibrinous exudate:** Contains fibrin
- **Purulent exudate (pus):** Creamy white exudate from dead neutrophils; seen in bacterial infection
- **Hemorrhagic exudate:** Bloody red exudate

#### WOUND HEALING

Wound healing is a complex and dynamic process of replacing devitalized and missing cellular structures and tissue layers.

#### Types of Wounds



- **Acute wound:** Heals without many complications within expected time frame, e.g., surgical wounds and trauma wounds.
- **Chronic wound:** Underlying pathology or infection causes wound or interferes with the healing process. For example, diabetic ulcer and pressure ulcer.

#### Wound Healing Process

- **Healing by primary intention:** No or little scar tissue, e.g., surgical wounds.
- **Healing by secondary intention:** Marked loss of tissue. Edges of the wound are too far and wound gets closed naturally through granulation and epithelialization. For example, lacerated wounds, pressure ulcers, and traumatic injuries.



## Types of Gangrene

TABLE 1 TYPES OF GANGRENE	
Dry gangrene	Wet gangrene
<ul style="list-style-type: none"> <li>• begins in the distal part of the limb due to ischemia and spreads upward.</li> <li>• Most commonly affects limbs</li> <li>• Commonly due to arterial occlusion, e.g., Raynaud's disease, Buerger's disease</li> <li>• Organ is dry, shrink and black in color</li> <li>• Bacteria fail to survive</li> </ul>  <p style="text-align: center;"><b>Dry gangrene</b></p>	<ul style="list-style-type: none"> <li>• Affects naturally moist tissues such as oral cavity, bowel, cervix, lungs, etc.</li> <li>• More commonly affects bowel</li> <li>• Commonly due to blockage of venous supply and less commonly due to blockage of arterial supply, e.g., diabetic foot, bedsore, gas gangrene</li> <li>• Organ is moist, soft, swollen, rotten and dark</li> <li>• This gangrene favors bacterial growth.</li> </ul>  <p style="text-align: center;"><b>Wet gangrene (gas gangrene)</b></p>

A special form of wet gangrene caused by Gram-positive anaerobic bacteria of *Clostridium* species is known as gas gangrene.



## GOLDEN POINTS to Remember



## GOLDEN POINTS

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- ➔ Cardinal signs of inflammation include redness, heat, swelling, pain, and loss of function.
- ➔ Kinins are plasma-derived chemical mediators of acute inflammation.
- ➔ **Nociception** is the physiological process by which information about tissue damage is communicated to the central nervous system (CNS).
- ➔ **Prostaglandins** increase the sensitivity of pain receptors by enhancing the pain-provoking effect of bradykinin. They contribute to pain and fever in inflammation.
- ➔ **Endorphins** interact with the opiate receptors in the brain to reduce our perception of **pain** and act similarly to drugs such as morphine and codeine.
- ➔ **Nociceptor** is a sensory neuron that responds to damaging or potentially damaging stimuli by sending 'possible threat' signals (pain) to the spinal cord and the brain.
- ➔ **Dehiscence** is the separation and disruption of previously-joined wound edges.
- ➔ **Hyperbaric oxygen** therapy means delivery of O<sub>2</sub> at increased atmospheric pressure, that accelerates granulation tissue formation and wound healing.
- ➔ Primary leukocyte that responds during inflammation is **Neutrophil**.
- ➔ Increase in immature neutrophils is known as '**left shift**'.
- ➔ Most common cause of altered inflammatory response is **Neutropenia**.
- ➔ Phagocytosis is also known as opsonization. This is used to neutralize foreign molecules.
- ➔ **Increased erythrocyte sedimentation rate (ESR)** and C-reactive protein (CRP) are markers of inflammatory process.
- ➔ **Eosinophilic response** is seen in allergy, parasitic infection and cancer.
- ➔ In the first 24 hours of Inflammation process, Ischemic cell injury and infiltration of neutrophils occur.
- ➔ During 24 to 48 hours to inflammatory process, **Macrophages** become dominant.
- ➔ Increased capillary permeability and blood flow to the site of injury occur during **inflammatory phase** of wound healing.
- ➔ Vitamin C is essential for collagen synthesis and wound healing.
- ➔ **Primary intention** healing involves clean, approximated wound edges.
- ➔ **Secondary intention** healing occurs in wounds with tissue loss or infection.
- ➔ **Tertiary intention** (delayed primary closure) is used in contaminated wounds.
- ➔ **Healthy granulation tissue is pink or red** and uneven in texture.
- ➔ Dark granulation tissue can be a sign of poor perfusion or infection.
- ➔ **Position change every 2 hours** is the most effective method of prevention of pressure ulcer in a bedridden patient.
- ➔ **Norton or Braden scales** are valid risk assessment tools for the assessment of pressure ulcers.
- ➔ **Waterlow scale or score** is used for risk assessment of pressure ulcer.
- ➔ **Movement of the affected area** is one of the important factors that delays wound healing. Age, blood flow, nutrient, moisture are some of the other factors that affect the wound healing process.
- ➔ Keloid is an abnormal overgrowth of scar tissue beyond the wound margin.
- ➔ Gangrene is a type of tissue death due to lack of blood supply and oxygen.
- ➔ Dry gangrene mostly affects limbs.
- ➔ Moist gangrene mostly affects bowel.



**"Sometimes the remedy is worse than the disease."**

—Francis Bacon



# MULTIPLE CHOICE QUESTIONS (Including Explained and Practice Questions)

## 1. INFLAMMATION AND WOUND HEALING

### INFLAMMATION

1. All of the following are local manifestations of inflammation; except: (AIIMS Jodhpur [SNO] 2023)

- a. Redness
- b. Increased WBC count
- c. Warmth
- d. Pain

2. Which of the following is a plasma-derived chemical mediator of acute inflammation? (AIIMS Bibinagar [Tutor] 2023)

- a. Histamine
- b. Prostaglandins
- c. Cytokines
- d. Kinins

3. A thirty-year-old patient has an ulcer over lateral malleolus. Nurse caring for this patient understands, the pain of the patient is due to: (OSSSC [NO] 2022)

- a. Edema
- b. Exudate
- c. Infection
- d. Ischemia

4. Inflammation of the oral mucosa is known as: (AIIMS Patna [NO] 2020)

- a. Gingivitis
- b. Glossitis
- c. Parotitis
- d. Stomatitis

5. Severe generalized edema is called: (Safdarjung NO 2018)

- a. Myxedema
- b. Pitting edema
- c. Anasarca
- d. Dependent edema

#### Explanation:

- When edema is massive and generalized, it is called anasarca. It is caused by a variety of clinical conditions, like heart failure, renal failure, liver failure, or problems with the lymphatic system.
- The swelling is mainly caused by abnormal retention of body fluids in extracellular space and body tissues. Due to this, anasarca is also known as dropsy, massive edema or generalized edema. In anasarca, the inflammation is widespread throughout the whole body.

6. Which of the following is not a plasma-derived chemical mediator?

- a. Cytokines
- b. Complement components
- c. Kinins
- d. Coagulation proteins

7. Cytokines are secreted by:

- a. Neutrophils
- b. B-Lymphocytes
- c. Endothelial cells
- d. All of the above

8. Which of the following increases vascular permeability during acute inflammation?

- a. Histamine
- b. Cytokines
- c. AFP
- d. Both (a) and (b)

9. Mechanism behind the characteristic feature of acute inflammation is:

- a. Redness and pain
- b. Pancytopenia
- c. Vasodilatation and increased vascular permeability
- d. Spongy bone marrow

10. The classical substances that increase the sensitivity of pain receptors by enhancing the pain-provoking effect of bradykinin are: (ESIC 2019)

- a. Nociceptor
- b. Endorphins
- c. Prostaglandins
- d. Enkephalin

#### Explanation:

- High levels of prostaglandins are produced in response to injury or infection and cause inflammation, which is associated with the symptoms of redness, swelling, pain and fever. This is an important part of the body's normal healing process.
- In contrast, Endorphins causes analgesic effect

11. Which of the following is a substance that decreases pain transmission and causes an inflammatory response? (AIIMS-BBS SNO 2019)

- a. Substance P
- b. Endorphin
- c. Prostaglandin
- d. Histamine

12. All of the following are evidences of an infection; except:

- a. Elevated WBC
- b. Purulent drainage
- c. Primary intention
- d. Increased leukocytes

13. Hemorrhage with collection of blood in the soft tissue is called:

- a. Contusion
- b. Purpura
- c. Ecchymoses
- d. Hematoma

14. Thick yellow drainage from the wound is known as:

(AIIMS 2016)

- a. Sanguineous
- b. Serous-sanguineous
- c. Serous
- d. Purulent

**Explanation:** Clear and watery drainage is serous. Sanguineous drainage is fresh blood that is prevalent among deep wounds of full and partial thickness. Serous-sanguineous drainage is thin and watery, and it is pink in color. Purulent drainage is when the leakage from wound appears milky. It is generally gray, green or yellow.

15. Which of the following types of exudates contains fibrin?

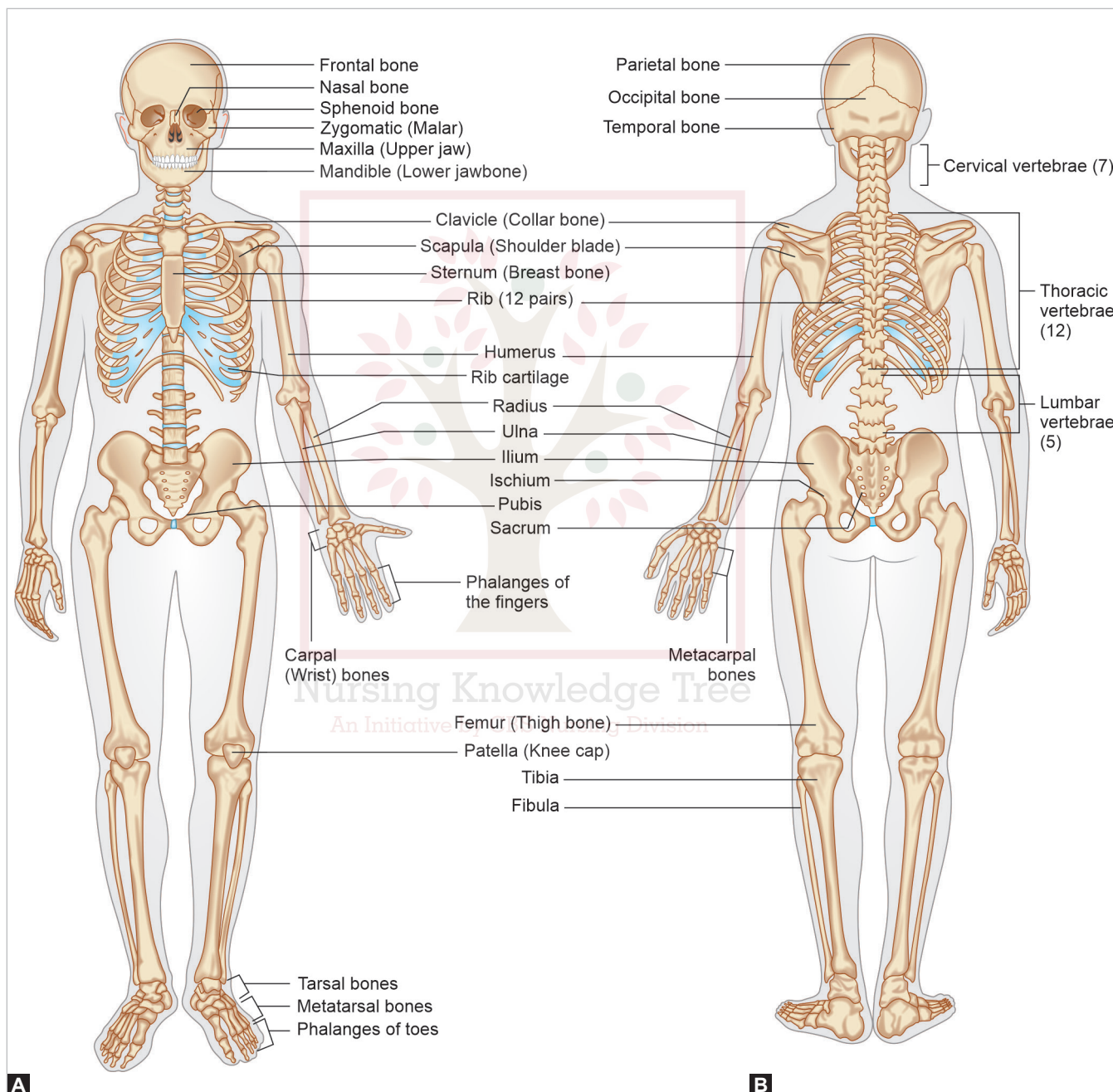
- a. Hemorrhagic exudate
- b. Serous exudate
- c. Fibrinous exudate
- d. Purulent exudate

Ans.

- 1. b
- 2. d
- 3. d
- 4. d
- 5. c
- 6. a
- 7. d
- 8. d
- 9. c
- 10. c
- 11. b
- 12. c
- 13. d
- 14. d
- 15. c

## 3. MUSCULOSKELETAL SYSTEM

### ANATOMY AND PHYSIOLOGY OF MUSCULOSKELETAL SYSTEM

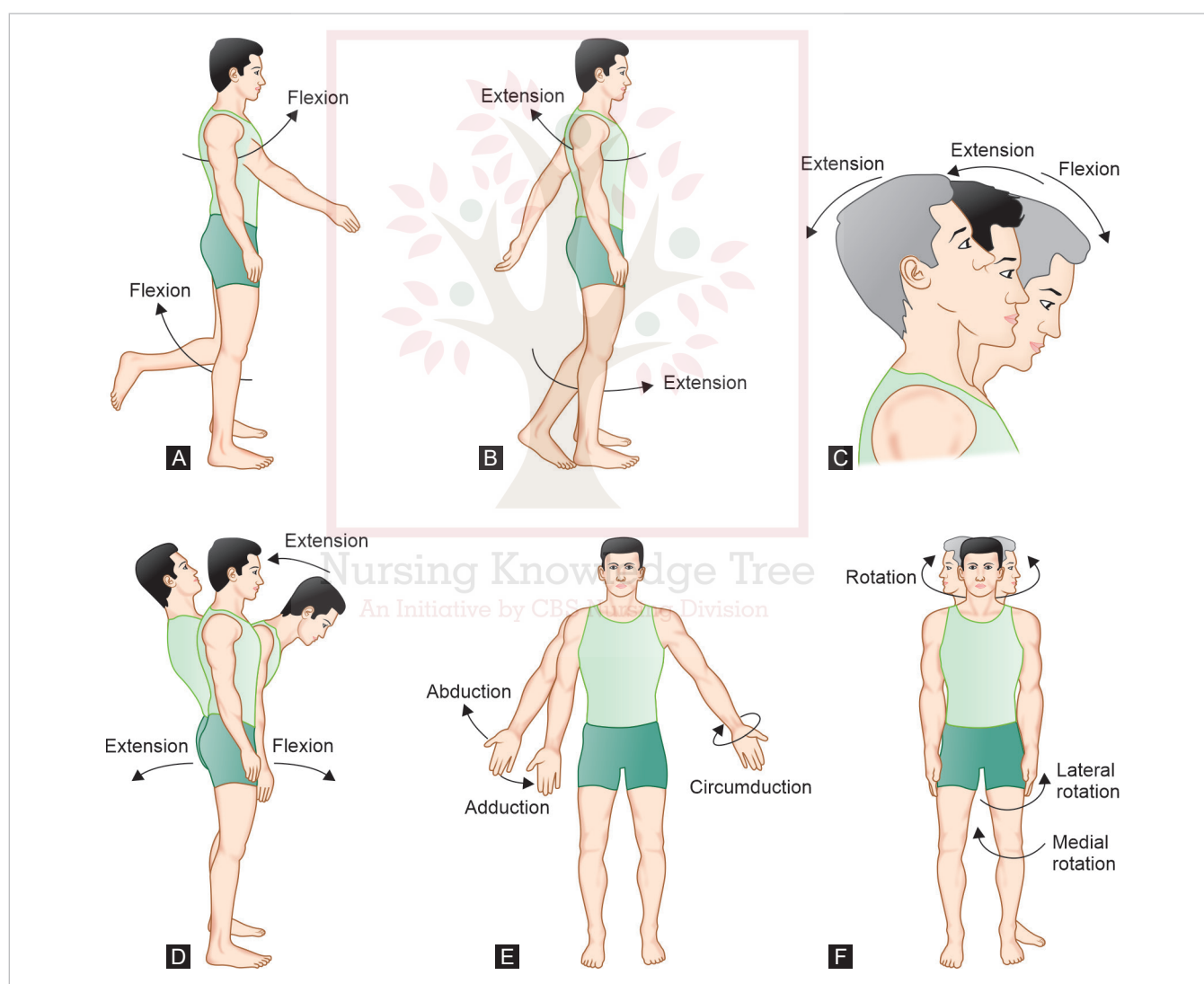


**Figures 2A and B:** Skeletal system of human body: (A) Anterior view; (B) Posterior view





- **Anatomical terms of motion:**
  - **Flexion and extension:** *Flexion* describes a bending movement that *decreases* the angle between a segment and its proximal segment. *Extension* is the opposite of flexion.
  - **Abduction and adduction:** *Abduction* refers to a motion that pulls a structure or part *away from* the midline of the body. *Adduction* refers to a motion that pulls a structure or part *toward* the midline of the body.
  - **Elevation and depression:** The terms elevation and depression refer to movement above and below the horizontal.
  - **Rotation:** Internal rotation (or medial rotation) refers to rotation towards the axis of the body. External rotation (or lateral rotation) refers to rotation away from the center of the body.
  - **Pronation and supination:** Pronation and supination refer to rotation of the forearm or foot so that in the anatomical position, the palm or sole is facing anteriorly (supination) or posteriorly (pronation).
- Diaphragm is a dome-shaped muscular structure which separates the thoracic cavity and abdominal cavity. Diaphragm helps in respiration.



**Figures 4A to F:** Angular movements: **A and B.** Flexion and extension at the shoulder and knees; **C.** Extension and flexion of the head and neck; **D.** Angular movements: Flexion and extension of the vertebral column; **E.** Abduction, adduction and circumduction of the upper limb at the shoulder; **F.** Rotation of the head, neck and lower limb

## ANATOMY OF BONE

- Long bone has a shaft called diaphysis.
- Diaphysis is a hollow cylinder that covers the bone marrow.
- The two ends of long bones are called proximal and distal epiphyses
- In children, epiphyses are separated from diaphysis by epiphyseal plate.
- Epiphyseal plate or cartilage is the site for bone growth; once bone growth is complete, this cartilage is replaced with bone and it will be joined to the diaphysis.



## 8. RESPIRATORY SYSTEM

## ANATOMY AND PHYSIOLOGY

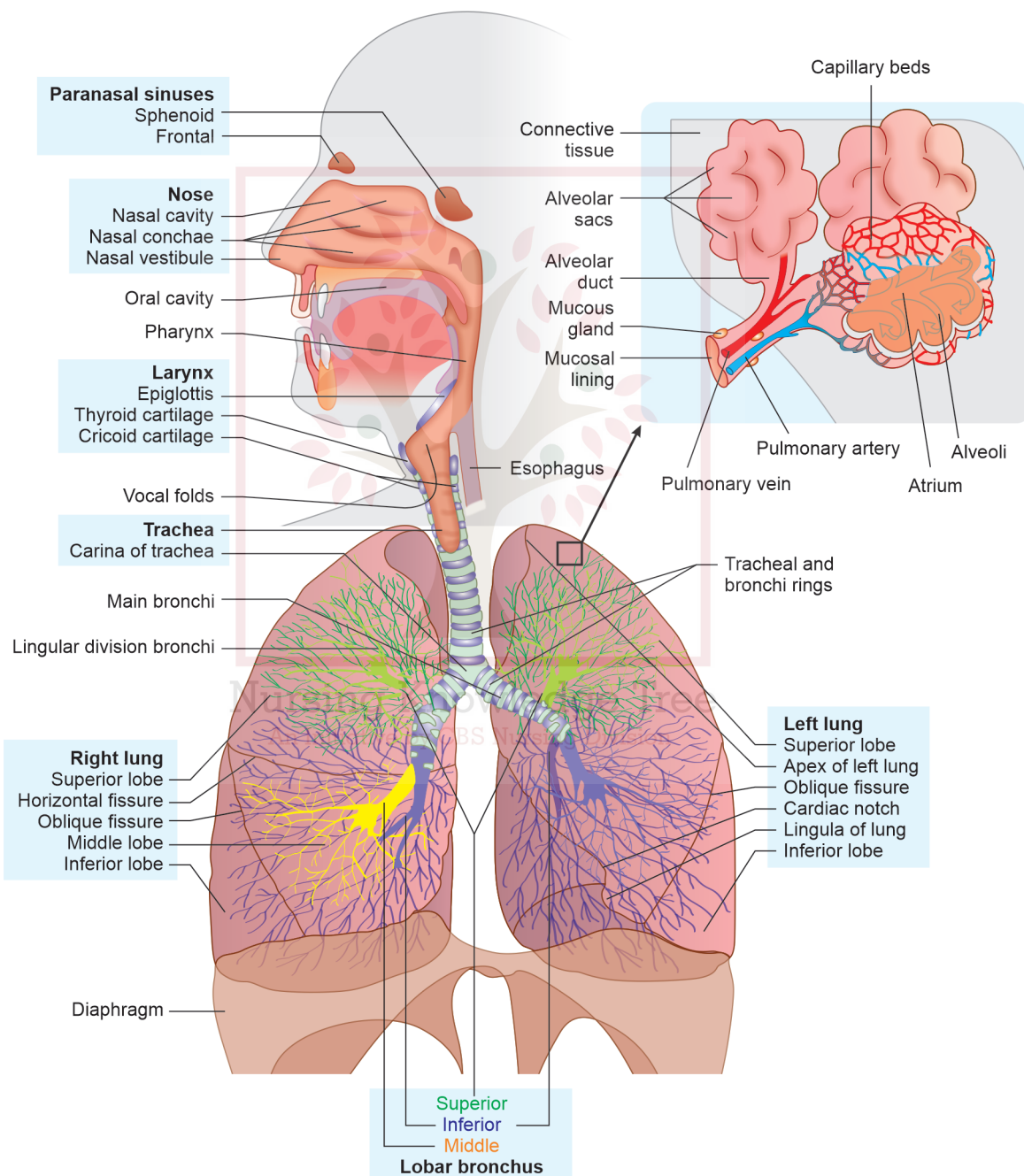


Figure 59: Respiratory system and an enlarged cross-section of lungs



- Normally, the difference in SBP between inspiration and expiration does not exceed 15 mm Hg. In patients with severe asthma, a difference of >25 mm Hg may be noted which is known as pulsus paradoxus.
- **First line treatment:** Bronchodilator treatment with a  $\beta_2$ -agonist, typically salbutamol. The inhaled route is most effective.
- **Anticholinergic agents:** Ipratropium bromide does not cross the blood-brain barrier and is the recommended agent of choice.
- **Glucocorticoids** are the most important treatment for status asthmaticus. Action usually requires at least 4–6 hours to occur because protein synthesis is required before the initiation of its anti-inflammatory effects.

### KEY POINTS

- **Stridor** is a high-pitched, wheezing sound caused by disrupted airflow.
- Stridor may also be called musical breathing or **extra-thoracic airway obstruction**.
- **Single largest risk factor for Asthma:** Atopy/Hereditary
- **Asthma triad** includes nasal **polyps**, **asthma**, and sensitivity to **aspirin** and **NSAIDs**.
- Drug of Choice for chronic asthma: Inhaled corticosteroid + long acting beta agonists (LABA)
- Drug of Choice for acute, severe asthma: Inhaled Short acting beta agonists (SABA) + systemic steroids
- Bronchodilator of choice in COPD: Anticholinergics

## Chronic Obstructive Pulmonary Disease

Chronic obstructive pulmonary disease (COPD) is a life threatening lung disease. It causes chronic obstruction of airway in the lungs. In some cases, the air sacs (alveoli) get damaged gradually leading to a condition called emphysema (**pink puffers**). In other cases, the airways get inflamed (irritation) leading to a condition called chronic bronchitis (**blue bloaters**).

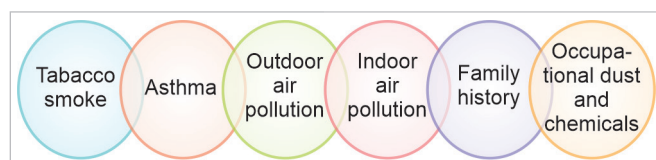


Figure 64: Risk factors for COPD

- **Symptoms of COPD:**
- COPD is characterized by three primary symptoms:
  1. Cough
  2. Sputum production and
  3. Dyspnea on exertion (DOE)—Weight loss is common because dyspnea interferes with eating.
- **Barrel chest** is seen in emphysema.
- Wheezing (Whistling sound while breathing), chest tightness, cough with mucus often called smoker's cough, Unintended weight loss (in later stages)
- **Diagnosis:** Detailed history, chest X-ray and pulmonary function tests. In ABG, patient will have **respiratory acidosis**.

**Management:** Risk reduction (smoking cessation), Inhaled bronchodilators, nebulization and inhaled or oral steroids;

antibiotics, oxygen therapy, steam inhalations, chest physiotherapy and pulmonary rehabilitation program.

- **Chest physiotherapy (CPT) given in morning is the best**, can also be given 1 hour before meal and 2–3 hours after food.
- Management—Bronchodilators, mucolytics, corticosteroids, antibiotics.
- **Complications:** Respiratory infections such as cold, flu and pneumonia; high blood pressure, heart problems including heart attack, right sided heart failure (cor pulmonale), lung cancer, depression, etc.

### KEY POINTS

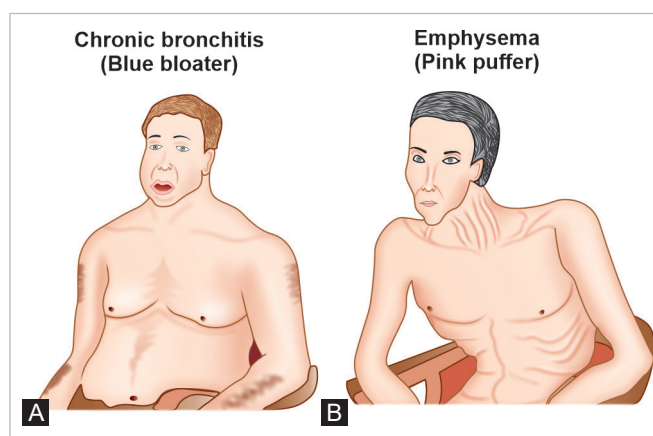
- **Pink puffers:** Puffing to breathe (hyperventilation) and pink complexion (maintain oxygen level with rapid breathing)
- **Blue bloaters:** Cyanosis (blue) and edema (bloating) due to chronic bronchitis
- **Signs and Symptoms:** Remember LUNG DAMAGE
  - **L** – Lack of energy
  - **U** – Unable to tolerate (shortness of breath)
  - **N** – Nutrition poor (weight loss due to energy utilized for breathing effort particularly in emphysema)
  - **G** – Gases abnormal (Low  $PO_2$  and High  $PCO_2$ )
- Teach the patient about pursed-lip and diaphragmatic breathing to manage shortness of breath
- Low amount of oxygen delivery is advised (1–2 L/min)
- Maintain oxygen saturation at 88–93% (Low oxygen is the respiratory stimulant in patients with COPD....Not  $CO_2$ )

### Point to remember

Oxygen needs to be administered judiciously in COPD patients because hypercapnia (increased  $CO_2$ ) cause respiratory stimuli, increased oxygen may lead to poor respiratory efforts in these patients.

## Emphysema

- The abnormal presence of air in tissues or cavities of the body.



Figures 65A and B: A. Chronic bronchitis; B. Emphysema





"It is health that is real wealth and not pieces of gold and silver."

—Mahatma Gandhi



# MULTIPLE CHOICE QUESTIONS (Including Explained and Practice Questions)

## 8. RESPIRATORY SYSTEM

### ANATOMY AND PHYSIOLOGY OF UPPER RESPIRATORY SYSTEM

**1474. When ventilation exceeds perfusion, it leads to which of the following?** (AIIMS Jodhpur [SNO] 2023)

- a. Dead space
- b. Silent unit
- c. Pneumothorax
- d. Shunt

**1475. The communication between the nasopharynx and the oropharynx is called:**

(Gujarat Nursing Service [NO/Principal] 2022)

- a. Nasal cavity
- b. Nasopharynx isthmus
- c. Choanae
- d. Pharyngeal isthmus

**1476. The voice box is known as:** (AIIMS Patna [NO] 2020)

- a. Larynx
- b. Diaphragm
- c. Bronchioles
- d. Pharynx

**1477. Normally respiratory center is stimulated by:** (JIPMER 2012)

- a. Oxygen
- b.  $\text{HCO}_3^-$
- c. Carbon dioxide
- d. Lactic acid

**1478. The chemoreceptors in the medulla oblongata increases the breathing rate in response to increase in blood concentration of:**

- a. Oxygen
- b. Carbon dioxide
- c.  $\text{H}^+$
- d. Carbon dioxide and  $\text{H}^+$

**1479. Carina is situated at which level of in adult?**

- a. T3
- b. T4
- c. T6
- d. T9

**1480. Trachea is lined by:**

- a. Stratified squamous epithelium
- b. Cuboidal epithelium
- c. Simple columnar epithelium
- d. Pseudostratified columnar epithelium

**1481. The length of an adult trachea is:**

- a. 6–8 cm
- b. 10–11 cm
- c. 14–15 cm
- d. 16–20 cm

**1482. Tracheal bifurcation occurs at the level of:**

- a. T1-T2
- b. T3-T4
- c. T4-T5
- d. None

**1483. Sinuses are:**

- a. Cavities in nasal bone
- b. Chamber containing vitreous humor in eye
- c. Chamber producing ear wax
- d. All of the above

**1484. The cartilage that completely encircles the larynx with the narrow part anteriorly and the broad part posteriorly is called:** (AIIMS Raipur Grade II 2017)

- a. Thyroid cartilage
- b. Cricoid cartilage
- c. Arytenoid cartilage
- d. Epiglottis

**Explanation:** The thyroid cartilage is a hyaline cartilage structure that sits in front of the larynx and above the thyroid gland. The arytenoid cartilages are a pair of small three-sided pyramids which form part of the larynx to which the vocal folds (vocal cords) are attached. The epiglottis is a flap in the throat which keeps food from entering the windpipe and the lungs.

**1485. "Tracheostomy" is usually performed between the tracheal rings of cartilage of:** (AIIMS Raipur NO 2019)

- a. Second and third
- b. Third and fourth
- c. Fourth and fifth
- d. All of these

**1486. Trachea starts at the level of:**

- a. 4th cervical vertebra
- b. 5th cervical vertebra
- c. 6th cervical vertebra
- d. 7th cervical vertebra

### ANATOMY AND PHYSIOLOGY OF LOWER RESPIRATORY SYSTEM

**1487. The area between the lungs, occupied by the heart, great vessels, trachea and esophagus is known as:**

(AIIMS Bibinagar [Tutor] 2023)

- a. Hilum
- b. Diaphragm
- c. Mediastinum
- d. Pleural cavity

**1488. The narrow part of larynx at the level of vocal cords is:**

(Gujarat Nursing Service [NO/Principal] 2022)

- a. Vestibule
- b. Rima glottidis
- c. Infraglottic part
- d. Cricoid cartilage

**1489. The visceral pleura is:**

(AIIMS Nagpur [NO] 2020)

- a. The fluid around the lungs
- b. The thinnest portion of the peritoneum
- c. The membrane lining surface of the lungs
- d. The membrane lining the wall of the thoracic cavity

**1490. Muscles used in respiration are all; except:**

- a. Internal intercostal muscles
- b. External intercostal muscles
- c. Diaphragm
- d. Sternocleidomastoid muscles

**1491. The nerve which supplies the diaphragm is:**

- a. Diaphragmatic
- b. Phrenic
- c. Radial
- d. Sciatic

**1492. Blood supply of the lungs is:**

- a. Pulmonary artery
- b. Pulmonary vein
- c. Bronchial artery
- d. All of these

**1493. Which among the following activity helps in the production of surfactant?**

- a. Taking deep breaths
- b. Coughing exercises
- c. Strenuous exercises
- d. ROM exercises

Ans.

- 1474. a
- 1475. d
- 1476. a
- 1477. c
- 1478. d
- 1479. b
- 1480. d
- 1481. b
- 1482. c
- 1483. a
- 1484. b
- 1485. a
- 1486. c
- 1487. c
- 1488. b
- 1489. c
- 1490. d
- 1491. b
- 1492. d
- 1493. a

## 17. HOMEOSTASIS, EMERGENCY AND CRITICAL CARE NURSING

### SHOCK

- Shock is a condition in which the systemic blood pressure is inadequate to deliver oxygen and nutrients to cellular function and vital organs.
- It is an acute medical condition associated with reduced perfusion to body tissues.

### Stages of Shock

- Initial stage:**
  - Decreased cardiac output results in reduced mean arterial pressure.
  - Increase in heart rate due to stimulation of sympathetic nervous system.
  - Characterized by increased heart rate, decreased blood pressure, thirst, pale, cool, moist skin over the face.
- Compensatory stage:**
  - Stimulation of sympathetic nervous system releases epinephrine and norepinephrine to maintain homeostasis.
  - Peripheral vasoconstriction caused by stimulation of  $\alpha_1$  adrenergic fibers assures more blood available for heart and brain.

- Coronary and cerebral artery dilation occurs due to stimulation of beta adrenergic fibers. This results in increased cardiac output.
- Increased renal sodium and water reabsorption results in increased cardiac output.

- Progressive stage:**

- Compensatory mechanisms become ineffective.
- Impaired perfusion results in anaerobic metabolism and cellular hypoxia
- Renal ischemia stimulates renin-angiotensin-aldosterone system which further causes vasoconstriction.

- Irreversible stage:**

- Compensatory mechanisms are ineffective.
- Coronary and cerebral tissue perfusion drops, and organ systems fail.

### Classification of Shock Based on Etiology

- Hypovolemic shock
- Cardiogenic shock
- Circulatory or disruptive shock

**TABLE 104 DESCRIPTION OF DIFFERENT TYPES OF SHOCKS AND THEIR MANAGEMENT**

Type of shock	Description	Management
<b>Hypovolemic shock</b>	Occurs because of low blood volume <b>Causes:</b> <ul style="list-style-type: none"> <li><b>External fluid loss</b>, such as vomiting, diarrhea, diuresis, Diabetes insipidus, trauma, surgery.</li> <li><b>Internal fluid shift</b>, such as hemorrhage, burns, ascites, peritonitis and dehydration</li> </ul> <b>Manifestations:</b> <ul style="list-style-type: none"> <li>Rapid, irregular, and thready pulse.</li> <li>Urine output &lt;20 mL/hr or 480 mL/24 hrs.</li> </ul>	<b>Crystalloids:</b> RL and NS are commonly used for fluid replacement <b>Colloids:</b> Albumin, Dextran and Hetastarch can also be used to replace fluid volume. Blood transfusion, if the cause is hemorrhagic shock <b>Position:</b> Trendelenburg is preferred because it promotes venous return <b>Medication:</b> Vasoactive drugs, e.g., Dobutamine, Dopamine, Epinephrine, Norepinephrine, Vasopressin, Amrinone.
<b>Cardiogenic shock</b>	Heart is not able to perform its function. <b>Causes:</b> Myocardial infarction, cardiomyopathy, valve disease, cardiac tamponade, arrhythmia <b>Manifestations</b> <ul style="list-style-type: none"> <li>Anginal pain</li> <li>Dysrhythmia</li> <li>Cyanotic skin</li> <li>Jugular vein distension</li> <li>Pulmonary crackles</li> </ul>	<ul style="list-style-type: none"> <li>Supplemental oxygen</li> <li>Pain management</li> <li>Selected fluid support</li> <li>Vasoactive medications, e.g., Dobutamine, Nitroglycerine, Dopamine, Epinephrine, Norepinephrine, Vasopressin, Amrinone and antiarrhythmic drugs.</li> <li><b>Cardiac supportive measures, such as pacemaker, ventricular assistive devices, Intra-aortic balloon pump (IABP) or Extracorporeal cardiopulmonary bypass</b></li> </ul>
<b>Circulatory or Distributive shock</b> (It includes septic shock, anaphylactic shock, neurogenic shock and hypodynamic shock)	<ul style="list-style-type: none"> <li>Results from excessive vasodilation and impaired distribution of blood flow.</li> <li>Cardiac output is usually normal.</li> <li><b>Septic shock is the most common cause of disruptive shock.</b></li> <li><b>Other causes:</b> Systemic inflammatory response syndrome (SIRS)</li> <li><b>Other non-infectious causes</b> include toxic shock syndrome, anaphylaxis, insect bites, transfusion reaction, etc.</li> </ul>	



**Explanation:** Stressors are external events or circumstances that can trigger a stress response in an individual. They can be physical, psychological, or social in nature and can vary widely depending on the individual's perception and ability to cope.

## SHOCK

**4153. Which type of shock is seen in Anaphylaxis?**

(NORCET-7 2024)

- |                       |                      |
|-----------------------|----------------------|
| a. Distributive shock | b. Septic shock      |
| c. Cardiogenic shock  | d. Hypovolemic shock |

**4154. Which of the following is the sign of severe Hypovolemia?**

(NORCET-6 2024)

- |                |                 |
|----------------|-----------------|
| a. Bradycardia | b. Tachycardia  |
| c. Warm skin   | d. Hypertension |

**4155. Which symptom of hypovolemia among the following causes life-threatening hypovolemic shock?**

(NORCET-6 2024)

- |                |                 |
|----------------|-----------------|
| a. Bradycardia | b. Tachycardia  |
| c. Hypotension | d. Hypertension |

**4156. Which of the following is the firstline option to increase blood volume in a patient with hypovolemic shock?**

(NORCET-6 2024)

- |                    |                     |
|--------------------|---------------------|
| a. Normal saline   | b. 3% saline        |
| c. Dextrose saline | d. Plasma expanders |

**4157. When evaluating a client with symptoms of shock, it is important for the nurse to differentiate between neurogenic and hypovolemic shock. The symptoms of neurogenic shock differ from hypovolemic shock in that:**

(NORCET-4 2023)

- |  |
|--|
| a. In neurogenic shock, the skin is warm and dry                 |
| b. In hypovolemic shock, there is bradycardia                    |
| c. In hypovolemic shock, capillary refill is less than 2 seconds |
| d. In neurogenic shock, there is delayed capillary refill        |

**4158. Cause of decreased peripheral vascular resistance is:**

(NORCET-4 2023)

- |                      |                       |
|----------------------|-----------------------|
| a. Cardiogenic shock | b. Hypovolemic shock  |
| c. Neurogenic shock  | d. Pulmonary embolism |

**4159. A nurse assesses a client hospitalized following a road traffic accident (RTA). The obtained vital signs are: blood pressure (BP) 76/52 mmHg, heart rate (HR) 124, respiratory rate (RR) 24, cool clammy skin and rapid breathing. For which life-threatening complication should the nurse carefully monitor the client?**

(NORCET-5 2023)

- |                      |                      |
|----------------------|----------------------|
| a. Hypovolemic shock | b. Neurogenic shock  |
| c. Septic shock      | d. Cardiogenic shock |

**4160. The example for distributive shock among the following shock types is:**

(UPUMS [NO] 2023)

- |                       |                      |
|-----------------------|----------------------|
| a. Anaphylactic shock | b. Burn shock        |
| c. Surgical shock     | d. Hemorrhagic shock |

**4161. The type of shock uncounted in case of road traffic accidents with the significant hemorrhage is:**

(Gujarat Nursing Service [NO/Principal] 2022)

- |                      |                      |
|----------------------|----------------------|
| a. Septic shock      | b. Neurogenic shock  |
| c. Hypovolemic shock | d. Cardiogenic shock |

**4162. A patient's blood pressure suddenly drops, what is expected from on-duty nursing officer, that which drug will doctor order that is to be administered immediately?**

(Combined AIIMS [NO] 2020)

- |                     |                  |
|---------------------|------------------|
| a. Dopamine         | b. Noradrenaline |
| c. Both (a) and (b) | d. None of these |

**4163. What is an early sign of hypovolemic shock?**

(Combined AIIMS [NO] 2020)

- Loss of blood volume up to 15%
- Loss of blood volume up to 30%
- Loss of blood volume up to 60%
- Loss of blood volume up to 80%

**4164. Vasoconstrictors should not be used in:**

(Safdarjung NO 2018)

- Neurogenic shock
- Hemorrhagic shock
- Secondary shock
- Hypotension due to spinal anesthesia

### Explanation:

- Vasoconstrictors should not be used in hemorrhagic shock as it may lead to severe arteriolar vasoconstriction causing tissue ischemia. In hemorrhagic shock, the body's normal response is vasoconstriction to divert blood toward the vital organs, severe vasoconstriction may cause the tissue hypoxia and anaerobic respiration and death.
- While in other shocks, vasoconstrictors are recommended to combat the hypotension.

**4165. Primarily in shock, there is:**

- Metabolic waste accumulates
- Poor perfusion of tissues
- Decreased cardiac contraction
- Fatigue of skeletal muscles

**4166. Shock resulting from a severe allergic reaction is:**

- |                     |                       |
|---------------------|-----------------------|
| a. Septic shock     | b. Anaphylactic shock |
| c. Neurogenic shock | d. Traumatic shock    |

**4167. Shock caused by an overwhelming infection is known as:**

- |                       |                 |
|-----------------------|-----------------|
| a. Anaphylactic shock | b. Cardiogenic  |
| c. Neurogenic shock   | d. Septic shock |

**4168. Shock caused by spinal cord injury is known as:**

- |                       |                      |
|-----------------------|----------------------|
| a. Anaphylactic shock | b. Cardiogenic shock |
| c. Neurogenic shock   | d. Septic shock      |

**4169. After falling from a 10 feet ladder, a patient is brought to the emergency department. The patient is alert, reports back pain and has difficulty moving the lower extremities. Which additional observation is an indication that the patient may be experiencing neurogenic shock?**

- Cool and pale skin
- Bradycardia
- Poor skin turgor
- Increased systolic blood pressure

(NCFL 2019)

### Explanation:

- Neurogenic shock is an emergency situation caused by impaired blood circulation due to trauma of spine. It leads to the drastic **drop in blood pressure**. Symptoms include fainting, nausea, vomiting, increased sweating, anxiety, pale skin, dizziness, etc. In severe patients—**bradycardia, hypotension, hypothermia, feeble pulse and cyanosis** is seen.
- Bradycardia is seen in neurogenic shock because the blood vessels are relaxed, hence, the heart doesn't beat fast.
- Skin remains warm in the neurogenic shock.

**4170. The drug of choice in anaphylactic shock is:**

- Atropine
- Adrenaline
- Amiodarone
- Propofol

**Ans.**

4153. a
4154. b
4155. c
4156. a
4157. a
4158. c
4159. a
4160. a
4161. c
4162. c
4163. a
4164. b
4165. b
4166. b
4167. d
4168. c
4169. b
4170. b



**4319. A hospital caught fire. What will be the priority nursing intervention in this case?** (NORCET-3 2022)

- Evacuate the patient
- Use the fire extinguisher
- Shut off the oxygen supply
- Call fire department

**Explanation:**

In the event of a fire in a hospital, the priority nursing intervention follows the RACE protocol, which stands for:

- **Rescue/Remove** any persons from the immediate scene.
- **Alert/Activate** the nearest alarm and call Fire Safety Dept.
- **Confine/Close** all doors to the hazard or fire area. Shut off Oxygen comes under Confine/close. Shutting off oxygen early may endanger the patient who depends on oxygen supply.
- **Extinguish/Evacuate:** Use a fire extinguisher if safe to do so, or evacuate if necessary.

**4320. After school bus accident, a nurse should give the first priority to which patient?** (NORCET-3 2022)

- A patient with leakage of clear fluid from the ear
- A patient with hematoma on head
- A patient with 2-inch scalp laceration
- A patient showing clear pupillary reaction with light

**4321. Which nursing intervention is appropriate to prevent pulmonary embolus in a patient who is prescribed bed rest?** (SNEHP 2022)

- Limit the client's fluid intake
- Encourage deep breathing and coughing
- Use the knee gatch when the client is in bed
- Teach the patient to move legs in bed

**4322. Nurse Linda was monitoring a 35-year-old male patient who was receiving blood transfusion. On assessment, the nurse found that the respiratory rate is 24 and blood pressure is 90/60. Which of the following is the priority action by the nurse?** (JIPMER [NO] 2020)

- Slow the infusion rate
- Immediately flush IV line with normal saline
- Immediately stop the transfusion
- Notify the doctor

**4323. A patient is brought to the emergency department after a road traffic accident. The patient's motor score is 2 on GCS. This means the patient response is:** (JIPMER [NO] 2020)

- Decerebrate response
- Decorticate response
- Withdraws from touch
- Withdraws to pain

**4324. An unconscious patient is brought to the emergency room after a road traffic accident. Which of the following is the priority intervention in this patient?** (JIPMER [NO] 2020)

- Assess for level of consciousness
- Assess vital signs
- Airway management
- Management of bleeding

**4325. A patient suddenly develops respiratory difficulties such as dyspnea, what is the first priority of the nursing officer?** (Combined AIIMS [NO] 2020)

- Raise the head of bed for Fowler's position and administer oxygen
- Only administer oxygen
- Check oxygen saturation of client
- Give Semi-Fowler's position

**4326. Which is the primary assessment done when patients BP fall during labor?** (Combined AIIMS [NO] 2020)

- Assess vital signs of client
- Assess the weight of client
- Assess the blood pressure of client
- Both a and b

**4327. A patient is hungry; he/she suddenly falls down on the floor, what would be the first action of the Nursing officer upon this situation?** (Combined AIIMS [NO] 2020)

- Check for pulse and breathing
- Wait for patient to get conscious
- Do nothing
- None of the above

**4328. A nurse taking care of a patient with chest tube drainage suddenly notices that there is no fluctuation in the water seal tube. Which of the following action should the nurse take first?** (NORCET 2023)

- Turn the patient to the unaffected side
- Inform the physician
- Check the tubing to ensure there is no kinking
- Start milking the chest tube

**Explanation:** In a chest tube drainage system, fluctuation (tidaling) in the water seal chamber indicates normal movement of fluid or air with the patient's respiration. If fluctuation suddenly stops, it may suggest:

- Tube obstruction (e.g., kinking, clamping, or dependent loops)
- Lung re-expansion (less likely to be sudden)
- Dislodgement or system malfunction

The nurse should **first check the tubing for kinks or obstructions** to rule out a mechanical cause before notifying the physician or considering further interventions. Start milking the chest tube is not done routinely; requires a physician's order and can cause increased negative pressure.

**4329. Calculate the infusion pump rate to administer 100 mL of NS over 2 hours?**

- 20 mL/hr
- 40 mL/hr
- 50 mL/hr
- 100 mL/hr

**4330. After IV fluid administration, balance between intracellular and extracellular fluid is established through which process?**

- Osmosis
- Diffusion
- Active transport
- All of these

**4331. The Maximum concentration of potassium delivered via a central vein is:**

- 20 mmol/hr
- 40 mmol/hr
- 60 mmol/hr
- 100 mmol/hr

(Ref: Harrison's 19th ed. pg. 307)

**Explanation:**

- IV potassium therapy:
  - Via peripheral vein = 20-40 mEq of KCl per liter.
  - Via central vein = 10-20 mEq of KCl per hour

**4332. The immediate management of choice to restore BP and peripheral circulation is:**

- Trendelenburg position
- Ringer lactate
- Colloids
- Inotropes

**Ans.**

4319. a
4320. a
4321. d
4322. c
4323. a
4324. c
4325. a
4326. a
4327. a
4328. c
4329. c
4330. a
4331. a
4332. b



## 18. GENETICS

### CELLULAR DIVISION

Cellular division is a process of formation of two or more new cells (daughter cells) from an old cell. It involves equal distribution of cellular material in daughter cells.

#### Types

##### Mitosis

- Creates two identical daughter cells that each contain the same number of chromosomes as their parent cells. (**2n to 2n**)
- Example of Mitosis: Repair, growth and maintenance of cells.
- It consists of six phases:
  - Interphase:** Resting phase
  - Prophase:** Chromosomes condense and become visible; spindle fibers begin to form.
  - Prometaphase:** the nuclear envelop disintegrates.
  - Metaphase:** Chromosomes align at the metaphase (equatorial) plate
  - Anaphase:** Sister chromatids separate and move toward opposite spindle poles
  - Telophase:** Chromosomes decondense

##### Meiosis

- Two daughter cells form with half number of chromosomes. (2n to n)
- Occurs during germ cell formation
- Two divisions - meiosis 1 and meiosis 2
- Examples:** Gamete formation

### MUTATION

Mutation is a change in the nitrogenous base sequence of DNA. This is a permanent process.

#### Classification

On the basis of time of mutation

- Acquired:** Mutation occurs after birth due to some environmental factors.
- Inherited:** Mutation which passes to child from parents.

#### Mutagens

- Physical:** Low pH, high temperature, ionizing (X-ray, gamma ray etc.) and non-ionizing (UV ray) radiation.
- Chemical:** Acid, alkali, etc.

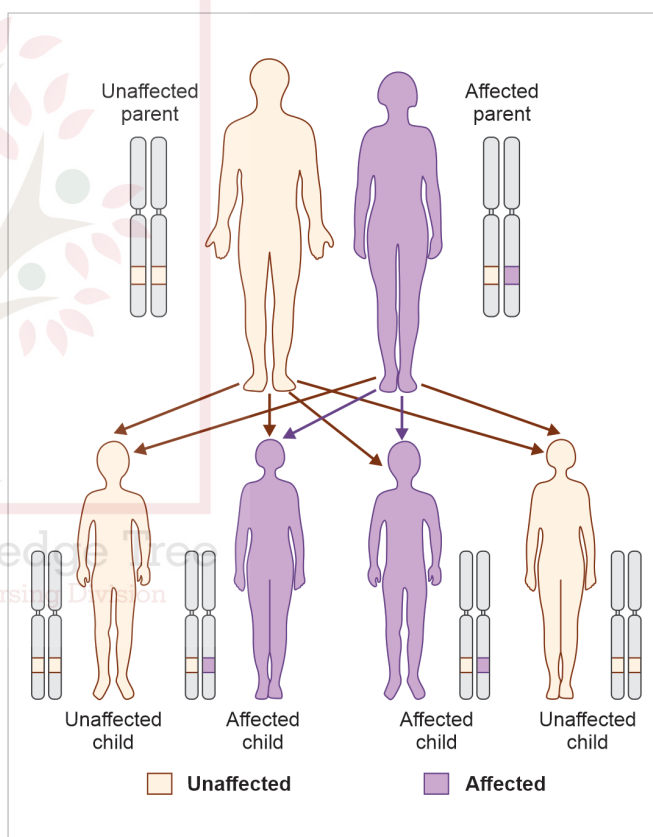
**Patterns of Inheritance:** Five types of inheritance

- Autosomal dominant
- Autosomal recessive
- X-linked dominant
- X-linked recessive
- Mitochondrial

#### 1. Autosomal dominant:

- Only one copy of the mutant gene (from either parent) is enough to cause disease.
- Both males and females are equally affected.
- Transmission occurs from parent to child in successive generations (vertical pattern).
- An affected person has a 50% chance of passing the disorder to each child.
- Male-to-male transmission is seen.

**Example:** Huntington's disease, Marfan syndrome, achondroplasia, neurofibromatosis, etc.



**Figure 138:** Autosomal dominant inheritance

#### 2. Autosomal recessive:

- Disease occurs only when both copies of the gene are defective (homozygous state).
- Carriers (heterozygotes) are usually unaffected.
- Both sexes are equally affected.
- Often seen among siblings of an affected individual (horizontal pattern).
- Consanguinity increases the risk.
- Each child of carrier parents has a 25% chance of being affected.

**Example:** Sickle cell anemia, thalassemia, phenylketonuria, cystic fibrosis, Tay-Sachs disease.



**"Health is a state of complete harmony of the body, mind and spirit."**

—B.K.S. Iyengar



# MULTIPLE CHOICE QUESTIONS

## (Including Explained and Practice Questions)

### 18. GENETICS

**4417. The disease that occurs due to the defect in the genes of one or other parent and is transmitted to the offspring is known as \_\_\_\_\_ disease/disorder. (AIIMS Patna [NO] 2020)**

- a. Congenital
- b. Organic
- c. Hereditary
- d. Allergic

**4418. The science of betterment of the human race by application of the law of inheritance is called: (AIIMS BPL NO 2018)**

- a. Genetics
- b. Eugenics
- c. Euphenics
- d. Euthenics

**Explanation:** Eugenics is the science of betterment of human race by application of the law of inheritance or *science* of improving the *human species* by selectively mating people with specific desirable hereditary traits.

**4419. DNA replication occurs in which phase of cell division?**

- a. Interphase
- b. Prophase
- c. Metaphase
- d. Anaphase

**4420. Meiotic division occurs during**

- a. GI tissue repair
- b. Gamete formation
- c. Bone growth
- d. Hair growth

**4421. The bivalent structure is formed during**

- a. Leptotene
- b. Zygotene
- c. Pachytene
- d. Diplotene

**4422. Point mutation is seen in which of the following conditions?**

- a. Sickle cell anemia
- b. Cri-du-chat
- c. Down syndrome
- d. Night blindness

**4423. An affected child will be born from both carrier parents is seen in:**

- a. Autosomal dominant
- b. Autosomal recessive
- c. X-linked dominant
- d. X-linked recessive

**4424. The most common congenital heart disease associated with Patau syndrome is:**

- a. Ventricular septal defect
- b. Teratology of fallot
- c. Atrioventricular septal defect
- d. Coarctation of aorta

**4425. What is the diagnostic level of phenylalanine in phenylketonuria?**

- a. >100 mg/dL
- b. >90 mg/dL
- c. >1 mg/dL
- d. >30 mg/dL

**4426. All are the parts of the management of sickle cell crisis; except:**

- a. Oxygen
- b. Fluid resuscitation
- c. Atropine administration
- d. Blood transfusion

**4427. A female child with hemophilia A of an unaffected father marries a normal man. What is the chance of hemophilia A in her son?**

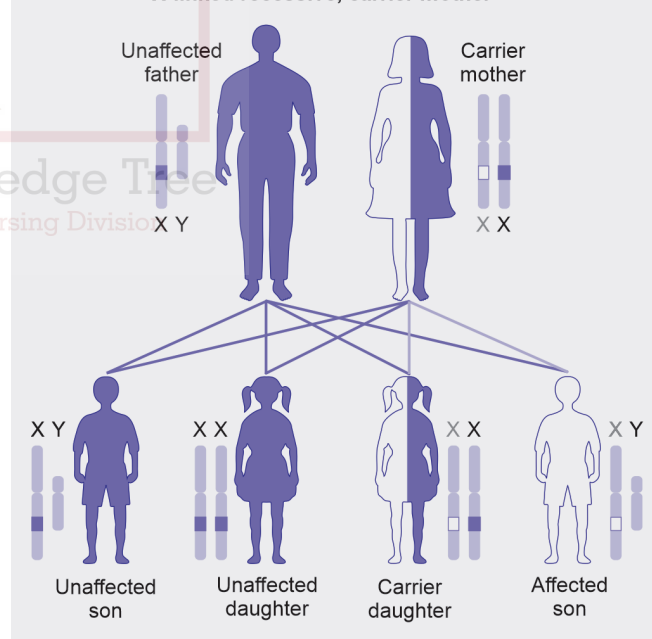
- a. 25%
- b. 50%
- c. 75%
- d. 100%

**4428. A normal (unaffected) man marries a hemophilia carrier female. Which of the following would be true for their children?**

- a. 25% sons will have hemophilia
- b. 25% daughters will have hemophilia
- c. 50% daughters will have hemophilia
- d. 50% sons will have hemophilia

**Explanation:** A son would have 50% chance of suffering from hemophilia whereas a daughter would have 50% chance of become a carrier.

**X-linked recessive, carrier mother**



**4429. A normal male, whose father has sickle cell trait marries a normal female. What is the chance of sickle cell anemia in his daughter?**

- a. 0%
- b. 25%
- c. 50%
- d. 75%

**Explanation:** Sickle cell anemia is inherited as an autosomal recessive disorder. Disease occurs only when both S alleles (SS) are inherited. A "normal male" is taken as AA (not a carrier), even though his father had trait (AS). A "normal female" is also AA. From AA × AA, only AA offspring are produced. Hence, no child (including daughters) can have sickle cell anemia.



**Ans.**

- 4417. c
- 4418. b
- 4419. a
- 4420. b
- 4421. b
- 4422. a
- 4423. b
- 4424. a
- 4425. d
- 4426. c
- 4427. d
- 4428. d
- 4429. a



**"The secret of getting ahead is getting started."**

—Mark Twain



# CLINICAL CASE-BASED QUESTIONS

1

New Question 2025-26

A nurse is teaching a group of nursing students about inflammatory bowel diseases. After the session, the nurse asks a student to identify a characteristic clinical manifestation of ulcerative colitis. Which response by the student indicates that the teaching was effective?

- a. Lesions are scattered throughout the gastrointestinal tract
- b. The intestinal mucosa shows a cobblestone appearance
- c. Strictures and fissures are commonly present
- d. The patient may experience profuse diarrhea

**Ans. (d) The patient may experience profuse diarrhea**

**Explanation:** Characteristic features of Ulcerative colitis include: Profuse, bloody diarrhea (sometimes with mucus), Abdominal cramping, Rectal bleeding, Urgency and tenesmus. The other options describe Crohn's disease, not ulcerative colitis.

2

New Question 2025-26

A nurse in the ED is assessing a patient who had a fiber optic colonoscopy 18 hours ago. The patient complains of worsening abdominal pain, fever, and chills. Among the following conditions, which one should the nurse prioritize as the most immediate concern?

- a. Colon cancer
- b. Bowel perforation
- c. Viral gastroenteritis
- d. Diverticulitis

**Ans. (b) Bowel perforation**

**Explanation:** Bowel perforation is a serious complication of colonoscopy that can occur when the colonoscope is inserted too forcefully or when a polyp is removed. Symptoms of bowel perforation include abdominal pain, fever, chills, nausea and vomiting.

3

New Question 2025-26

A 50-year-old patient visits a clinic for a routine check-up. Their blood pressure reading is recorded as 130/80 mm Hg. Based on the provided blood pressure reading, what is the calculated pulse pressure for this patient, and how is it interpreted?

- a. Pulse pressure is 50 mm Hg, which is within the normal range.
- b. Pulse pressure is 105 mm Hg, which is above the normal range.
- c. Pulse pressure is 50 mm Hg, which is below the normal range.
- d. Pulse pressure is 50 mm Hg, which is above the normal range.

**Ans. (d) Pulse pressure is 50 mm Hg, which is above the normal range.**

**Explanation:** The pulse pressure is calculated by subtracting the diastolic blood pressure (DBP) from the systolic blood pressure (SBP).

In this case, SBP is 130 mm Hg and DBP is 80 mm Hg.

Pulse Pressure = SBP - DBP = 130 - 80 = 50 mm Hg.

The normal range for pulse pressure is 30–40 mm Hg. Since the calculated pulse pressure (50 mm Hg) falls above the normal range.

4

New Question 2025-26

A 28-year-old male client presents to the Emergency Department with unexplained paralysis from the hip downwards. Further assessment and investigations revealed that the patient has Guillain-Barré Syndrome (GBS). Which of the following assessment findings requires immediate nursing action?

- a. Diminished reflexes in the lower extremities
- b. Persistent head ache
- c. The patient has a weak cough
- d. Paresthesia in the upper limbs

**Ans. (c) The patient has a weak cough**

**Explanation:** GBS can cause respiratory muscle paralysis. Therefore, the nurse should assess for any signs and symptoms of respiratory muscle weakness. Findings such as weak cough, shortness of breath, dyspnea need to be reported immediately to the physician for further intervention (e.g., Mechanical ventilation).

5

New Question 2025-26

A 25-year-old male client who suffered multiple injuries in a road accident is brought to the emergency room. Which of the following assessments should be accorded the highest priority?

- a. Unequal pupils
- b. Tachycardia
- c. A deviated trachea
- d. Ecchymosis in the umbilical region

**Ans. (c) A deviated trachea**

**Explanation:** A deviated trachea is a symptom of tension pneumothorax, which may result in respiratory distress if left untreated.

**Strategy:** Use Airway Breathing Circulation (ABC) principle to prioritize the nursing care.

# ? Image-Based Questions (Including All Topics)

1. Which instrument is shown in image given here?

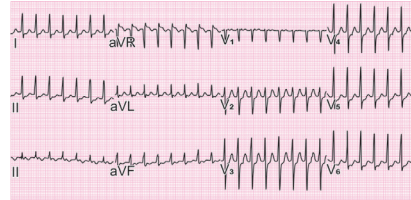
(NORCET-8 2025)



- a. Ellick evacuator
- b. Toomey's syringe
- c. Foley catheter
- d. Luer lock syringe

5. Identify the ECG pattern shown in the image here.

(NORCET-8 2025)



- a. Supraventricular tachycardia
- b. Atrial fibrillation
- c. Ventricular tachycardia
- d. Sinus tachycardia

2. Identify the equipment shown in the image given here:

(NORCET-8 2025, NORCET-7 2024)

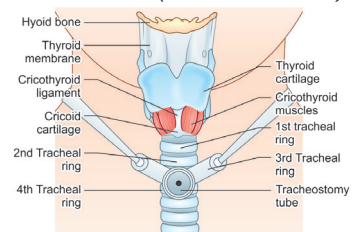


- a. CPAP (Continuous Positive Airway Pressure)
- b. High-flow nasal cannula
- c. Mechanical ventilator
- d. Oxygen concentrator

6. The image shows the anatomical site selected for performing a tracheostomy. Identify the level at which tracheostomy is performed in the image given here:

(NORCET-8 2025)

- a. 1st to 2nd tracheal rings
- b. 2nd to 3rd tracheal rings
- c. 3rd to 4th tracheal rings
- d. Above the cricoid cartilage



3. Examine the X-ray shown in the image. What is the most likely clinical finding?

(NORCET-8 2025)



- a. Cardiomegaly
- b. Pulmonary edema
- c. Pneumothorax
- d. Pleural effusion

7. Identify the type of dysrhythmia in the image given here:

(NORCET-7 2024)



- a. Ventricular fibrillation
- b. Atrial fibrillation
- c. Paroxysmal supraventricular tachycardia
- d. Atrial flutter

4. Identify the ECG pattern shown in the image.

(NORCET-8 2025)



- a. Wolff-Parkinson-White (WPW) syndrome
- b. Supraventricular tachycardia (SVT)
- c. Ventricular fibrillation
- d. First-degree AV block

8. How to dilute the medication shown in the image given here?

(NORCET-6 2024)

- a. 1 mL medicine in 1 mL saline
- b. 0.9 mL medicine in 1 mL saline
- c. 1 mL medicine in 9 mL saline
- d. 9 mL medicine in 1 mL saline



Ans.

- 1. a
- 2. a
- 3. a
- 4. a
- 5. a
- 6. c
- 7. a
- 8. c



# PHARMACOLOGY

## SYNOPSIS

### KEY TERMINOLOGIES

- **Pharmacology:** The term 'pharmacology' is derived from Greek words 'pharmakon', meaning drugs; and 'logos', meaning study or knowledge. Pharmacology is the scientific study of the origin, nature, chemistry, effects and uses of drugs.
- **Drugs/medications:** Drugs or medications refer to any chemical substance that affects living systems. The term 'drug' is derived from the French word 'drogue', meaning dry herb. Drugs are used for the treatment of diseases, prevention of illnesses or pathological states, and diagnosis of disease conditions.
- **Chemotherapy:** Therapeutic treatment of various local or systemic infections or malignancies by using various drugs or chemicals is called chemotherapy.
- **Pharmacognosy:** The branch of pharmacology dealing with the economic, biological and chemical aspects of natural drugs and their constituents. It studies the sources of drugs and the physical characteristics of crude or unrefined drugs, e.g., plants.
- **Pharmacodynamics:** Refers to the effects that drugs have on the body (what drug does to the body).
- **Pharmacokinetics:** Refers to the movement of drugs within the body—in other words, what the body does to the drug. It involves the processes of absorption, distribution, metabolism, and excretion.
- **Absorption:**
  - Physiological considerations in absorption: **Blood flow, total surface area, time of arrival of the drug and time of drug at absorption site.**
  - Other considerations for absorption: **Solubility, chemical stability and solubility of drug in lipids.**
- **Distribution:**
  - Drugs are distributed into major body fluids (e.g., plasma).
  - Drug distribution is affected by the extent that the drug binds to plasma proteins and barriers.
- **Metabolism (Biotransformation):**
  - It is a process of metabolizing drugs in the body.
  - Occurs mainly in liver.
  - Prodrugs are only activated by the hepatic metabolism e.g., Levodopa.
- **Excretion:** Excretion includes renal (by active glomerular filtration and fecal elimination).
- **The time of onset of drug action:** It is determined by the time taken by the drug to reach the site of action. It is largely controlled by:
  - Route of administration
  - Manner of distribution
  - Rate of absorption
- **Bioavailability:** It is a measure of fraction of administered drug that reaches the systemic circulation in unchanged form.
- **First Pass Metabolism:** It is the metabolism of a drug at the site of absorption during its passage from the site of absorption into the systemic circulation. All orally administered drugs undergo first pass metabolism. Drugs administered through sublingual, transdermal and parenteral routes do not undergo first pass metabolism (bypasses portal circulation).
- **Agonist:** These are the drugs which bind to the receptor and produce same biological effect as that of the receptor.
- **Antagonist:** These are the drugs which oppose the action of the receptor or an agonist.
- **Antidote:** A drug which can counteract a form of poisoning, e.g., Atropine is an antidote to organophosphorus poisoning.
- **Lethal Dose 50 (LD50):** Standard measure of the toxicity of a drug/substance that will kill half of the sample population of a specific test animal in a specific period.
- **Pharmacovigilance:** The science and activities relating to the detection, assessment, understanding and prevention of adverse effects, or any other drug-related problem.
- **Teratogenicity:** It is the ability of a drug to produce harmful effect on fetus when administered during pregnancy.
- **Anaphylaxis:** It is a severe allergic reaction (hypersensitive reaction), which occurs due to ingestion of drugs or any foreign protein material.
- **Antidote:** A drug or chemical substance which counteracts the harmful effects of other drug or chemical.
- **Contraindication:** Any condition or factor that prevents or withholds the use of a medicine or drug.
- **Emulsion:** It is the mixture of two or more liquids that are normally immiscible (e.g., Mixture of water and oil). Milk is a natural emulsion.



**"The secret of getting ahead is getting started."**

—Mark Twain



# MULTIPLE CHOICE QUESTIONS

## (Including Explained and Practice Questions)

### KEY TERMINOLOGIES IN PHARMACOLOGY

**1. The metabolism of a drug during its passage from the site of absorption to systemic circulation is known as:**

(AIIMS Bibinagar [Tutor] 2023)

- a. Bio availability
- b. First pass effect
- c. Bio equivalence
- d. Auto induction

**2. Pharmacokinetics is the branch that is related to:**

(SNEHP 2022)

- a. Drug manufacturing
- b. Drug designing
- c. Passage of drugs through the body
- d. Effect of drugs on the body

**3. A partial agonist has:**

(SNEHP 2022)

- a. Full affinity and intrinsic activity
- b. Full affinity but less intrinsic activity
- c. Full intrinsic activity but less affinity
- d. Activity opposite to agonist

**4. What is called to the relationship between drug concentration and time?**

(Western Coalfields Limited 2022)

- a. Pharmacokinetics
- b. Pharmacodynamics
- c. Pharmacogenomics
- d. Pharmacovigilance

**5. What type of nomenclature of drugs are catchy and easy to remember?**

(Western Coalfields Limited 2022)

- a. Chemical name
- b. Generic name
- c. Proprietary name
- d. Non-proprietary name

**6. Unwanted but unavoidable pharmacodynamic effects of a drug at therapeutic dose is known as:**

- a. Hypersensitivity
- b. Toxic effects
- c. Side effects
- d. Idiosyncrasy

**Explanation:** Side effects are undesired but often unavoidable pharmacodynamic effects that occur at therapeutic dose. Idiosyncrasy refers to individual's peculiar sensitivity to a drug. Drug intolerance is defined as a lower threshold to the normal pharmacologic action of a drug.

**7. A drug can:**

(ESIC Chennai May 2012)

- a. Diagnose disease
- b. Cure disease
- c. Prevent disease
- d. All of these

**8. Pharmacodynamics includes:**

- a. Drug elimination
- b. Drug excretion
- c. Drug absorption
- d. Mechanism of action

**9. Loading dose of a drug is given:**

- a. To achieve high concentration in short time
- b. For rapid onset of action
- c. To avoid complication
- d. To minimize side effects

**Explanation:** Loading doses of drugs are typically administered to achieve a high concentration of the drug in the body quickly. This

is done to attain rapidly a therapeutic level of the drug, especially in cases where immediate action or relief is required. By providing a larger initial dose, the drug quickly reaches the desired concentration in the body, ensuring a more rapid onset of action.

**10. The maximum effect of a drug is defined by:**

- a. Therapeutic index
- b. Potency
- c. Efficacy
- d. Adversity

**11. Drugs used for rare disease are known as:**

- a. Orphan drugs
- b. Rare drugs
- c. Over the counter drugs
- d. Emergency drugs

**12. Which of the following is true about placebo?**

- a. Placebo is a dummy medication
- b. Placebo is the inert material added to drug
- c. Placebo is an additive added with the drug during manufacturing
- d. All patients respond to placebo

**Explanation:** A placebo is an inactive substance or treatment that is designed to resemble a real medication or intervention. It does not contain any active ingredients that directly treat the condition or symptoms being addressed. Placebos are commonly used in medical research as a control group to assess the efficacy of a new treatment.

**13. The substances derived from living organisms that are used to kill or prevent the growth of bacteria is known as:**

- a. Antibiotics
- b. Antidotes
- c. Antihistamines
- d. Antipyretics

**14. Drugs used to reduce the increased temperature of the body are called:**

- a. Antibiotics
- b. Analgesics
- c. Antipyretics
- d. Antihistamines

**15. Drugs used to relieve pain are known as:**

- a. Antibiotics
- b. Analgesics
- c. Antipyretics
- d. Antihistamines

**16. Drugs which increase urinary excretion is known as:**

- a. Antidiuretics
- b. Diuretics
- c. Laxatives
- d. Vasopressin

**17. Which of the following is an example of urinary antiseptic?**

- a. Cresol
- b. Furosemide
- c. Nitrofurantoin
- d. Hypochlorite

**18. Drug used to treat itching is known as:**

- a. Analgesic
- b. Anti-infective
- c. Antispasmodic
- d. Antipruritic

**19. Severe allergic reaction to a drug is known as:**

- a. Anaphylaxis
- b. Adverse effect
- c. Drug interaction
- d. Toxicity

**Explanation:** Anaphylaxis is an allergic reaction to an antigen (e.g., an antibiotic) to which the body has become hypersensitive. It typically causes a number of symptoms including an itchy rash, throat swelling and low blood pressure.



**Ans.**

- 1. b
- 2. c
- 3. b
- 4. a
- 5. c
- 6. c
- 7. d
- 8. d
- 9. a
- 10. c
- 11. a
- 12. a
- 13. a
- 14. c
- 15. b
- 16. b
- 17. c
- 18. d
- 19. a

**Explanation:** Sensitivity or allergic reaction to drug is tested by administering the drug intradermally usually with a very minimal dose (0.01-0.1 mL).

### ABBREVIATIONS USED IN PHARMACOLOGY/ PRESCRIPTION

65. The abbreviation 'hs' means:

- |                |                  |
|----------------|------------------|
| a. At bed time | b. Early morning |
| c. After meals | d. Before meals  |

66. 'gtt' means:

- |             |           |
|-------------|-----------|
| a. A drop   | b. mL     |
| c. An ounce | d. gallon |

67. Which of the following combination of acronym and its meaning is incorrect?

- |                           |
|---------------------------|
| a. prn – as needed        |
| b. npo – Nothing by mouth |
| c. pc – after meals       |
| d. OS – Right eye         |

**Explanation:** OS means Left eye; OD – Right eye; OU-both eyes

68. Which of the following combination of acronym and its meaning is incorrect?

- |                        |
|------------------------|
| a. qd – 4 times a day  |
| b. bid – 2 times a day |
| c. qh – every hour     |
| d. hs – bed time       |

**Explanation:** qd means every day; qid means 4 times a day.

69. The physician medication order reads as "Lasix 40 mg IM Stat". Which of the following is the correct interpretation of prescription by the nurse?

- |  |
|--|
| a. Intramuscular injection of 40 mg Lasix to be administered immediately                                     |
| b. Intramuscular injection of 40 mg Lasix to be administered as a single dose as and when the patient needed |
| c. Intramuscular injection of 40 mg Lasix to be administered after meals                                     |
| d. Intramuscular injection of 40 mg Lasix to be administered before bedtime                                  |

### WEIGHTS AND MEASURES OF DRUGS

70. The maximum volume of a drug that can be injected through intramuscular injection is:

- |          |          |
|----------|----------|
| a. 2 mL  | b. 5 mL  |
| c. 10 mL | d. 20 mL |

71. One tablespoon is equal to:

- |          |          |
|----------|----------|
| a. 5 mL  | b. 15 mL |
| c. 25 mL | d. 30 mL |

72. Two teaspoonful is equal to:

- |          |          |
|----------|----------|
| a. 6 mL  | b. 10 mL |
| c. 20 mL | d. 30 mL |

73. One pint is equal to:

- |           |           |
|-----------|-----------|
| a. 250 mL | b. 300 mL |
| c. 500 mL | d. 750 mL |

74. Dose of acetyl salicylic acid is: (JIPMER 2012)

- |                   |                  |
|-------------------|------------------|
| a. 10 mg/kg/dose  | b. 500 mg/dose   |
| c. 100 mg/kg/dose | d. 50 mg/kg/dose |

### DRUG/DOSE CALCULATION

75. A 6 kg child has fever, doctor instructed to give 50 mg/kg syrup paracetamol. The available dose is 250 mg/5 mL, how many mL will you give? (NORCET-6 2024)

- |         |         |
|---------|---------|
| a. 3 mL | b. 4 mL |
| c. 6 mL | d. 8 mL |

**Explanation:**

Given: Child weight = 6 kg; prescribed dose = 50 mg/kg.

Required dose =  $6 \times 50 = 300$  mg.

Available strength: 250 mg in 5 mL  $\Rightarrow$  50 mg/mL.

Volume needed:  $300 \text{ mg} \div 50 \text{ mg/mL} = 6 \text{ mL}$ .

76. 2000 mL fluid is to be given in 8 hours, what will be the rate of infusion? (NORCET-6 2024)

- |              |              |
|--------------|--------------|
| a. 150 mL/hr | b. 200 mL/hr |
| c. 250 mL/hr | d. 300 mL/hr |

77. Quantity of adrenaline in 100 mL of 1 in 1000 solution is:

(Gujarat Nursing Service [NO/Principal] 2022)

- |          |          |
|----------|----------|
| a. 1 g   | b. 10 g  |
| c. 0.1 g | d. 100 g |

**Explanation:**

1 in 1000 solution is expressed as 1 g in 1000 mL.

For 100 mL, the quantity is obtained by proportion.

$(1 \text{ g}/1000 \text{ mL}) \times 100 \text{ mL} = 0.1 \text{ g}$

So, 0.1 g of adrenaline is contained in 100 mL.

78. 5% glucose saline mean:

(Gujarat Nursing Service [NO/Principal] 2022)

- |  |
|--|
| a. 0.5 glucose and 0.45 g sodium chloride in each 100 mL       |
| b. 5 g of glucose and 0.9 g of sodium chloride in each 100 mL  |
| c. 5 g of glucose and 0.45 g of sodium chloride in each 100 mL |
| d. 0.5 g glucose and 0.9 g sodium chloride in each 100 mL      |

79. 5% dextrose in normal saline is:

(Gujarat Nursing Service [NO/Principal] 2022)

- |               |              |
|---------------|--------------|
| a. Isotonic   | b. Hypotonic |
| c. Hypertonic | d. Neutral   |

80. An order for prednisolone reads 10 mg four times a day. The dose for the child is 2 mg/kg/day. How many pounds does the child weigh? (AIIMS Nagpur [NO] 2020)

- |              |              |
|--------------|--------------|
| a. 36 pounds | b. 40 pounds |
| c. 46 pounds | d. 44 pounds |

**Explanation:**

• Total daily dose ordered =  $10 \text{ mg} \times 4 = 40 \text{ mg/day}$ .

• Pediatric dose = 2 mg/kg/day, so weight in kg =  $40 \div 2 = 20 \text{ kg}$ .

• Conversion to pounds:  $20 \text{ kg} \times 2.2 = 44 \text{ pounds}$ .

81. An infant is to receive thyroxin sodium, 0.35 mg once a day orally. The medications is available in elixir form 0.25 mg/mL. How much elixir should the nurse administer? (AIIMS Nagpur [NO] 2020)

- |           |           |
|-----------|-----------|
| a. 1.3 mL | b. 1 mL   |
| c. 2.4 mL | d. 1.4 mL |

**Explanation:**

Ordered dose: 0.35 mg

Available concentration: 0.25 mg/mL

Volume required = Ordered dose/available concentration  
 $= 0.35/0.25 = 1.4 \text{ mL}$

Ans.

- |     |   |
|-----|---|
| 65. | a |
| 66. | a |
| 67. | d |
| 68. | a |
| 69. | a |
| 70. | b |
| 71. | b |
| 72. | b |
| 73. | c |
| 74. | a |
| 75. | c |
| 76. | c |
| 77. | c |
| 78. | b |
| 79. | c |
| 80. | d |
| 81. | d |



# COMMUNITY HEALTH NURSING

## SYNOPSIS

**Community:** A group of people with diverse characteristics who are connected by social ties, share common perspectives, and engage in collective action in geographical locations or settings.

**Community health nursing:** Community health nursing is a synthesis of nursing practices and public health practices applied in promoting and preserving the health of populations.

- **Holistic concept:** This model is a synthesis of all the above concepts. It recognizes the strength of social, economic, political and environmental influences on health. This approach implies that all sectors of society have an impact on health.

### Determinants of Health

#### KEY POINTS

- The three features of a community are **location, population** and **social system**.
- **England** is one of the first countries to start concept of Healthcare and Public health.
- In 1861, **Louis Pasteur** published his **germ theory** which proposed that microorganisms caused diseases.
- The **father of modern public health** is '**John Snow**' for his pioneering investigations on Cholera epidemics.
- **Fastigium stage** is the highest point of disease or illness.
- **Public health science Era (1950-75):** Integration of social science and public health sciences took place. It is being called era of Community-centered approach.

## CONCEPTS AND DETERMINANTS OF HEALTH AND WELL-BEING

### Concepts of Health

**Health:** It is a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity (WHO 1948).

Following are the changing concepts of health:

- **Biomedical concept:** This concept views that health is an absence of disease and if one is free from disease, the person is considered healthy. It is based on the germ theory of disease.
- **Ecological concept:** This concept views that health is a dynamic equilibrium between man and his environment and disease is maladjustment or disruption in this balance.
- **Psychosocial concept:** According to this concept, health is influenced by social, psychological, cultural, economic and the political factors.

TABLE 1	FACTORS OF DETERMINANTS OF HEALTH
Determinants	Factors
Biological	Genetic make-up, growth and development
Behavioral and sociocultural conditions	Lifestyle, personal habit (smoking, drinking), nutritional status, sleep pattern, physical activity
Environment	<ul style="list-style-type: none"> <li>• <b>Internal environment:</b> Each and every body tissue and its functioning</li> <li>• <b>External environment (macro environment):</b> All that external to the individual and can be divided as physical, biological, chemical and psychosocial</li> <li>• <b>Domestic environment (micro environment):</b> Way of living and lifestyle such as eating habits, smoking, drinking, use of drugs, etc.</li> </ul>
Socioeconomic conditions	Per capita GNP, education, nutrition, employment, housing, political system of country and occupation
Health services	Affordability, Accessibility and Availability of healthcare services, e.g., access to and availability of vaccination
Aging of the population	Major concern of rapid population aging is the increased prevalence of chronic diseases and disabilities
Gender	Many programs have been established for female empowerment that focus on nutritional and reproductive health among females
Other factors	Factors such as revolution in information and communication also help us to access good health



## Brucellosis

- It is also known as **undulant fever**. It is occasionally transmitted to man by direct or indirect contact with infected animals.
- **Condition** is characterized by profuse sweating, arthritis and enlarged spleen.
- Causative organism is *B. melitensis*, *B. abortus*, *B. suis* and *B. canis*.
- **Main reservoir** of human infection are cattle, sheep, goats, swine, buffalo, horse and dogs.
- **Modes of transmission** are direct contact, food borne infection, air borne infection.
- **Incubation period** varies from 1 to 3 weeks.
- **Clinical manifestation** includes swinging pyrexia, sweating, arthralgia, lower back pain, headache, insomnia, splenomegaly, hepatomegaly, and leukopenia.

## Leptospirosis

- It is considered the widest spread disease transmitted from animal to man.
- **Causative agent** is leptospira, it is excreted from the urine of infected animal for a long period of time.
- The organism is visible by dark field illumination and silver staining.
- Modes of transmission are direct contact, indirect contact and droplet infection.
- Diagnosis is made by isolating the organism from blood and urine of infected person.
- Agglutination, indirect hemagglutination, Immunofluorescent antibody and ELISA tests are also available.
- Penicillin is the **drug of choice**.

## LEPROSY (HANSEN'S DISEASE)

- Chronic infective disease is caused by organism called *M. leprae*. It affects mainly the **peripheral nerves** and also affects the skin, muscles, bones, testis and internal organ.
- **Two polar forms** of disease are lepromatous leprosy and tuberculoid leprosy.
- **Lazarine Leprosy**: Seen in association with HIV
- **Clinical characteristics** are hypopigmented patches, partial or total loss of cutaneous sensation, presence of thickened nerves, presence of acid fast bacilli in the skin and nasal smears.
- The **signs** of advance disease include presence of nodules or lumps especially in the skin of face and ears; plantar ulcers, loss of fingers and toes, nasal depression, foot drop, claw toe and other deformities.
- **Agent**: *M. leprae*, an acid fast bacilli and occur in human host both intracellularly and extracellularly.
- **Sources of infection**: Man and wild animals.
- **Portal of exit**: Nose is the major portal of exit. Millions of *M. leprae* are released when patient sneezes or blows the nose.
- **Modes of transmission**: Droplet infection; contact transmission; other routes (transmitted by insect vector or by tattooing needles).
- **Incubation period**: 3–5 years or more for lepromatous cases.
- **Diagnosis**: Clinical examination (presence of hypopigmented patch with partial or total loss of sensation), bacteriological examination (skin smear, nasal smear or blow, nasal scraping).

### Lepromin test:

- 0.1 mL of lepromin into the inner aspect of the forearm
- Read reaction at 48 hours and 21 days' interval. **Early Fernandez reaction** (leprosy) or **late Mitsuda reaction** (in tuberculoid form of leprosy) occurs in positive cases.
- **Treatment** is multidrug therapy. Till recently chemotherapy for leprosy has relied on **dapsone**.
- At present only small number of **drugs** are available and are Rifampicin, Dapsone, Clofazimine, Ethionamide and Prothionamide, quinolones, minocycline, clarithromycin.

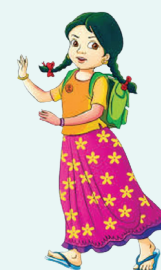
### KEY POINTS

- Multibacillary leprosy is diagnosed when there are more than 5 skin patches.
- **Dapsone** was the **first drug** discovered to treat **leprosy**.
- National Leprosy Control Program (NLCP) was launched by the Govt. of India in 1954-55.
- National Leprosy Eradication Program (NLEP) was introduced in 1983.

### KEY POINTS

#### Recent Updates on National Leprosy Eradication Program (NLEP):

- **2019**: Convergence of leprosy screening with Rashtriya Bal Swasthya Karyakram (RBSK) to screen children (0–18 years) at Anganwadi Centers and Govt. schools.
- **2020**: Convergence of NLEP with Rashtriya Kishore Swasthya Karyakaram (RKSK) for counseling the children of teen age group (13–19 years) about leprosy at Adolescent Friendly Clinics



Sapna

- “**Sapna**” is a concept (mascot) designed and developed using a common girl living in community, who will help spread awareness in the community about Leprosy, through key IEC messages. Sapna can be local school going girl who is willing to become ‘Sapna’. There can be any number of Sapnas in a village.

### Point to remember

Only two states/UTs are yet to achieve Elimination of Leprosy - Chhattisgarh and Dadra and Nagar Haveli.

## TETANUS

- **Causative agent**: *Clostridium tetani*, gram positive aerobic, spore bearing organism.
- The spores are terminal and give organism a drum stick appearance.
- **Reservoir** of organism is soil and dust.
- **Incubation period** is 6–10 days.
- Tetanus bacilli produce exotoxin with astounding lethal capacity, it affects motor end plate of skeletal system, spinal cord, brain and sympathetic system.





## PSYCHIATRIC NURSING

### SYNOPSIS

#### INTRODUCTION

- **Mental health nursing** is a specialized area of nursing practice that deals with promotion of mental health, prevention of mental illness, care and rehabilitation of mentally ill individuals, both in hospital and community.
- In **1943**, mental health nursing course was first started for male nurses.
- In **1965**, **Indian Nursing Council** included psychiatric nursing as a compulsory course in the BSc Nursing program.
- In **1976**, a **Master's in Psychiatric Nursing** was first started at **RAK College of Nursing, New Delhi**.

#### MENTAL HEALTH

- Mental health is an adjustment of human beings to the world and to each other with maximum effectiveness and happiness.
- Mental health is an equilibrium of body, mind and spirit with the environment.

#### MENTAL ILLNESS

- Mental illness is a maladjustment in living. It produces a disharmony in the person's ability to meet human needs comfortably or effectively and to function within a culture.
- Mental illness is a health condition involving changes in emotion, thinking and behavior (or a combination of these).

#### MENTAL HEALTHCARE ACT 2017

- The **Indian Mental Healthcare Act 2017** replaced the Mental Health Act 1987.
- Mental Healthcare Act 2017 (MHA 2017) received presidential consent on April 7th, 2017 and **replaced the 1987 Act**.

#### Salient Features of MHA 2017

- **Decriminalization of suicide attempt:** This Act has overturned section **309 of Indian Penal Code**. The MHA 2017 decriminalizes suicide attempt by a mentally ill person.

#### • Rights of persons with mental illness:

- Every person will have the right to access mental healthcare services.
- People with mental illness have the right to be protected from inhuman treatment.
- Mentally ill patients to have access to free legal services and the right to complain about shortcomings in provision of treatment.
- **Advance directive:** Empowers a mentally ill person to have the right to make an advance directive toward the way he/she wants to be treated.
- The government has to set up Central Mental Health Authority at national level and State Mental Health Authority at state level.
- The Act outlines the process of admission, treatment and discharge of patients.
- **No ECT** therapy without use of muscle relaxants.
- **No ECT** therapy for minors.
- **Financial Punishment:** Up to 6 months of imprisonment or ₹10,000 or both for violating of provisions of MHA 2017. Repeat offenders may face up to 2 years imprisonment or fine of ₹50,000–5,00,000 or both.
- **Reception order:** Refers to an order for admission and detention of a mentally ill person in a psychiatric hospital.

#### KEY POINTS

- The term 'Psychiatry' was coined by Christian Reil.
- Linda Richards is considered First Psychiatric Nurse.
- **Sigmund Freud** is considered as the father of **Psychoanalysis**.
- **Philippe Pinel** is widely recognized as the father of **Modern Psychiatry**.
- Freud's model of development which comprises 'id, ego and superego' is called Structural Model.
- World Mental Health Day is celebrated on 10th October.
- The Indian Lunacy Act was passed in 1912.



# CLINICAL CASE-BASED QUESTIONS

1

A 32-year-old woman complains of intense depressed mood for last 6 to 8 months. She also reports inability to enjoy previously pleasurable activities. The nurse recognizes this symptom as:

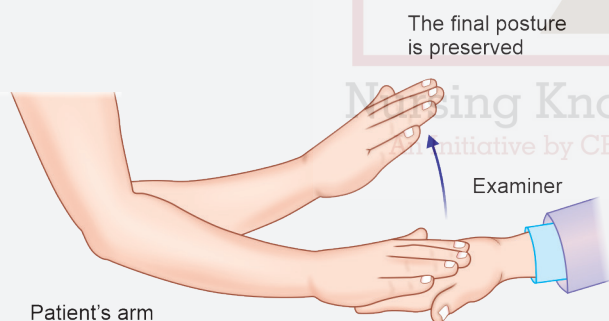
- a. Avolition
- b. Ambivalence
- c. Anhedonia
- d. Apathy

**Ans. (c) Anhedonia**

**Explanation:** Anhedonia is the inability to experience pleasure or lack of interest in previously enjoyable activities. Avolition is the inability to initiate or persist in goal-directed activities. Ambivalence is the state of having mixed feelings about something. Apathy is a lack of interest or concern in the world around oneself.

2

A patient was standing still near his bed and the examiner tried to move his hand as given in the picture. The catatonic feature demonstrated is:



As the examiner moves the patient's arm there is a feeling of plastic resistance

- a. Negativism
- b. Posturing
- c. Waxy Flexibility
- d. Echopraxia

**Ans. (c) Waxy Flexibility**

**Explanation:** Waxy flexibility is a condition in which a person's limbs can be moved into and held in any position, even a bizarre or uncomfortable one, without any resistance. The main difference between waxy flexibility and posturing is that waxy flexibility refers to the maintenance of a rigid or fixed posture when someone else moves or positions the individual's body, as if it were made of wax. On the other hand, posturing involves assuming unusual or rigid body positions voluntarily, often adopting bizarre or unnatural postures for an extended period of time without external manipulation.

3

A patient says she loves her child and wants to hug him but also hates him and wants to hurt him. She is unable to decide what to express. This is known as:

- a. Abulia
- b. Ambivalence
- c. Anhedonia
- d. Apathy

**Ans. (b) Ambivalence**

**Explanation:** Ambivalence refers to having conflicting feelings or emotions toward someone or something. In the given case, the patient expresses both love and hate toward her child, indicating conflicting emotions. She wants to hug him but also wants to hurt him, demonstrating ambivalence.

4

Mr. X is diagnosed with major depression and is admitted into an acute care psychiatric ward. He has recently attempted to commit suicide. While having a conversation with the nurse, he says to the nurse, "I wish I were dead! I've always been a failure. Things never go well for me." Which of the following statement by the nurse suggests that she has used appropriate therapeutic communication technique?

- a. "You have many reasons to continue to live for"
- b. "What makes you feel that you are a failure"
- c. "Experiencing these emotions is part of being depressed"
- d. "You've been feeling like a failure for a while"

**Ans. (d) "You've been feeling like a failure for a while"**

**Explanation:** Option d reflects therapeutic communication as it restates and validates the client's feelings, showing empathy and understanding without giving false reassurance, probing, or minimizing the client's emotions.

Other options:

- (a) gives false reassurance
- (b) is probing and judgmental.
- (c) minimizes the client's feelings.

5

The junior trainee nurse is helping the assigned nurse in the application of restraint to a patient as per the doctor orders since the patient is very agitated and trying to remove intravenous line and nasogastric tube. While preparing, the trainee nurse wants to know about the different methods of restraints. Which of the following are methods of restraints?

- a. Physical restraint
- b. Chemical restraint
- c. Environmental restraint
- d. All of these

**Ans. (d) All of these**



80. A dishonest person thinks other persons are also dishonest. Defense mechanism used by him is:  
a. Projection                      b. Introjection  
c. Suppression                    d. Rationalization
81. Which of the following defense mechanisms is often used by drug dependents to forget shame and pain?  
a. Sublimation                    b. Compensation  
c. Repression                      d. Displacement

## THERAPEUTIC COMMUNICATION

82. When a patient emotionally transfers feelings from past relationship towards onto the therapist is called?  
(NORCET-6 2024)  
a. Transference                    b. Countertransference  
c. Rationalization                d. Sublimation
83. Preparation for termination of a therapeutic relationship starts from which of the following phase?  
(NORCET-6 2024)  
a. Pre-interaction                b. Orientation  
c. Working                          d. Termination
84. When a nurse says to the patient that he or she is well groomed that day, the statement is referred to as?  
(NORCET-6 2024)  
a. Broad opening                b. Giving recognition  
c. Good rapport                    d. False affirmation
85. What is the name of the term for a nurse who is working in a mental health unit, showing undue concern and kindness towards a patient?  
(NORCET-6 2024)  
a. Transference                    b. Counter transference  
c. Emotional attachment        d. Sympathy
86. The misunderstanding or misinterpretation of the meaning which restricts effective communication is known as:  
(AIIMS Jodhpur [SNO] 2023)  
a. Emotional barrier              b. Physical barrier  
c. Semantic barrier                d. Cultural barrier
87. Which of the following clinical teaching methods is defined as a written record of an interaction between a nurse and a client?  
(AIIMS Bibinagar [Associate Professor] 2023)  
a. Nursing rounds  
b. Nursing care conference  
c. Case presentation  
d. Process recording
88. Which of the following approaches emphasises the importance of human relations in nursing?  
(UPUMS [NO] 2023)  
a. Therapeutic communication  
b. Cost effective approach  
c. High-tech, high-touch approach  
d. Comprehensive care approach
89. Ms. Sunitha hands over her patient to Ms. Manjula after her duty. Ms. Manjula also asks a few questions regarding patient conditions, medications, care and feeding, etc. The type of communication between these nurses will be:  
(UPUMS [NO] 2023)  
a. Intrapersonal                    b. Public communication  
c. Transpersonal                    d. Interpersonal
90. Empathy involves:  
(SNEHP 2022)  
a. Feeling sorry for someone  
b. Putting others before you  
c. Putting you in someone else's shoes  
d. Putting you before others

91. The least likely to be used by a cognitive therapist in treating a client is:  
(Gujarat Nursing Service [NO/Principal] 2022)  
a. Giving the client homework  
b. Arguing with client's statement  
c. Repeating what the client has said without its interpretation  
d. Pointing out irrational beliefs to the client
92. Which of the following means translating the message into verbal and non-verbal symbol to communicate the receiver?  
(AIIMS Nagpur [NO] 2020)  
a. Decoding                          b. Feedback  
c. Channel                            d. Encoding
93. When using non-verbal communication in a nurse-client relationship, the nurse must be aware of:  
(AIIMS Nagpur [NO] 2020)  
a. Contradictions to the clients  
b. The client's development level  
c. Ethnic background  
d. Nervous hand movements
94. Which of the following techniques are examples of non-therapeutic communication?  
(AIIMS Nagpur [NO] 2020)  
a. Restating                          b. Giving advice  
c. Focusing                          d. Paraphrasing
95. When a nurse demonstrates caring, sincerity, empathy, and trustworthiness while interacting with a patient, it is referred to as  
(AIIMS Nagpur [NO] 2020)  
a. Ethical nurse-patient interaction  
b. Legal nurse-patient interaction  
c. Therapeutic nurse-patient interaction  
d. Emotional nurse-patient interaction
96. How many quadrants are there in the Johari Window?  
a. 2                                      b. 6  
c. 4                                      d. 8

**Explanation:** The Johari Window model is a simple and useful tool for illustrating and improving self-awareness, and mutual understanding between individuals within a group. The Johari Window model can also be used to assess and improve a group's relationship with other groups.

97. Presenting the patient with a 'hypothetical situation' helps in the assessment of:  
(AIIMS Bhopal Grade-I 2018)  
a. Abstractability                    b. Insight  
c. Comprehension                    d. Judgment

**Explanation:** Judgment involves ability to understand the facts and draw conclusions. Judgment can be evaluated by exploring the patient's involvement in hypothetical situations, relationships and vocational choices by the use of situational judgment test

98. Emotion can be best expressed through:  
(Nursing Grade- II 2007)  
a. Gesture                            b. Language  
c. Posture                            d. All of these

**Explanation:** Emotional expressions are observable through verbal and nonverbal behaviors. Language is verbal communication and gesture and posture are the non-verbal communication.

99. When a client's behavior is considered abnormal, the nurse first needs to:  
a. Ignore the client's behavior  
b. Point out the client's disturbed behavior  
c. Focus on the emotions  
d. Focus on the positive behavior

Ans.

80. a  
81. c  
82. a  
83. b  
84. b  
85. b  
86. c  
87. d  
88. a  
89. d  
90. c  
91. b  
92. d  
93. d  
94. b  
95. c  
96. c  
97. d  
98. d  
99. b

- 346. Lysergic acid Diethylamide (LSD) is a product of:**  
(Gujarat Nursing Service [NO/Principal] 2022)
- Cocao
  - Opium
  - Cannabis sativa
  - Claviceps purpurea
- 347. Nicotine replacement therapy is used for:**  
(NORCET-1 2020)
- Smoking cessation
  - Alcohol withdrawal
  - Opioid withdrawal
  - Pontine hemorrhage
- 348. Which one of the following is derived from the plant 'Cannabis sativa'?**  
(AIIMS Patna [NO] 2020)
- Cocaine
  - Morphine
  - Ganja
  - Opium
- 349. Emergency treatment for cocaine toxicity seeks to stabilize:**  
(Combined AIIMS [NO] 2020)
- Kidney functioning
  - Body temperature
  - Heart functioning
  - All of these
- 350. In a client with substance abuse, which is the best indicator to assess the client's progress in rehabilitation?**
- Perform all the activities of daily living independently
  - The number of drug-free days he has
  - Taking all the prescribed drugs on time
  - Willing to come for follow up

**Explanation:** Number of drug-free days is the best indicator to determine the progress of rehabilitation of patient with substance use disorder. Maintenance of abstinence from the substance is the ultimate goal of the deaddiction treatment.

- 351. Substance abuse refers to:**
- Developing tolerance for substance
  - Maladaptive pattern of substance use
  - Experiencing withdrawal symptoms on stopping the substance
  - Psychological dependence on drugs
- 352. ICD-10 diagnostic criteria for drug dependence syndrome include all; except:**
- Development of tolerance
  - Episodic use of substances
  - Appearance of withdrawal symptoms on stopping the substance
  - A strong craving for the substance
- 353. Drug dependence refers to:**
- Harmful pattern of substance use
  - Physiological and psychological dependence on substances
  - Habitual use of substances
  - Experiencing psychotic symptoms due to substance use

## SCHIZOPHRENIA

- 354. A 25-year-old male diagnosed with schizophrenia presents with persecutory delusions, despite showing significant improvement on risperidone. What is the next nursing management?**  
(NORCET-8 2025)
- Start Risperidone syrup
  - Discontinue risperidone and observe the patient without medication
  - Switch to a benzodiazepine to manage delusions
  - Start Cognitive Behavioral Therapy (CBT)

**Explanation:** In schizophrenia, when positive symptoms like persecutory delusions persist despite significant improvement on antipsychotic medication (risperidone in this case), the next line of management is usually psychosocial intervention, especially Cognitive Behavioral Therapy (CBT). CBT helps patients reframe and manage persistent delusional beliefs alongside ongoing pharmacotherapy.

- 355. A patient has auditory hallucinations and becomes anxious. What is the role of a nurse in this scenario?**  
(NORCET-6 2024)
- Acknowledge the patient that only he can hear
  - Keep the patient in a quiet place
  - Finalize that the patient is seeking attention
  - Leave the patient alone
- 356. What is the name of the condition in which a patient with Schizophrenia, while watching TV says that anchor has shared some secret with him?**  
(NORCET-6 2024)
- Hallucination
  - Delusion
  - Flight of ideas
  - Thought broadcasting
- 357. What is the meaning of the schizophrenic patient's saying that 'someone is sending him secret message' while watching television?**  
(NORCET-6 2024)
- Idea of reference
  - Delusion
  - Hallucinations
  - Illusion
- 358. A patient with schizophrenia is getting agitated and after the administration of lorazepam IV, he becomes normal and start talking to others by asking food. What is the name of this effect after giving lorazepam?**  
(NORCET-6 2024)
- Rapid tranquilization effect
  - Korsakoff effect
  - Larenz effect
  - Fatuous effect
- 359. A schizophrenic patient is talking about power. What should be the probable diagnosis?**  
(NORCET-5 2023)
- Delusion of grandiosity
  - Delusion of persecution
  - Delusional of jealousy
  - Erotomania
- 360. Epigenic factors play an important role in schizophrenia. In genetically vulnerable people, environmental factors may increase the risk and trigger schizophrenia. Which of the following statements is true?**  
(AIIMS Jodhpur [SNO] 2023)
- Social companionship increases the risk of schizophrenia
  - Living in poverty does not increase the risk of schizophrenia.
  - Childhood trauma such as poverty or abuse can trigger schizophrenia
  - People living in rural areas are more vulnerable
- 361. The disorder in which the symptoms of schizophrenia and mood disorders are prominently present within the same episode is known as:**  
(UPUMS [NO] 2023)
- Induced delusional disorders
  - Persistent delusional disorders
  - Acute and transient psychotic disorders
  - Schizoaffective disorder



Ans.

346. d  
347. a  
348. c  
349. d  
350. b  
351. b  
352. b  
353. b  
354. d  
355. a  
356. b  
357. a  
358. a  
359. a  
360. c  
361. d



# 6

## PEDIATRIC NURSING

### SYNOPSIS

#### GROWTH AND DEVELOPMENT

##### Growth

Growth denotes the net increase in size or mass of tissue. It is a quantitative measurement.

##### Development

Development specifies the maturation of function. It is a qualitative measurement.

##### Stages of Growth and Development

###### Prenatal Period

Ovum	0–14 days after conception
Embryo	14 days to 8 weeks
Fetus	8 weeks to birth (8–40 weeks)

###### Postnatal Period

Neonate/newborn	0–28 days
Infancy	29 days – 1 year
Toddler	1–3 years
Preschool child	3–6 years
School going child	6–10 years (girls) 6–12 years (boys)
Adolescent	puberty–adulthood
Early adolescent	12–14 years
Middle adolescent	14–16 years
Late adolescent	16–20 years

##### Factors Affecting Growth and Development

- Age
- Race
- Genetic factors
- Sex
- Biorhythm
- Seasonal variation

- Antenatal factors
- Natal factors
- Nutritional factors
- Hormonal factors
- Environmental factors (Infections, illness, trauma to growing parts of bones)
- Social factors (Socioeconomic class, cultural habits, education of parents, education of child, psychological factors and psychosocial factors)

##### Principles of Growth and Development

- Growth and development in children are a continuous orderly process.
- Growth pattern of every individual is unique.
- Different body tissues grow at different rates.
- Development depends upon the maturation of nervous system.
- The sequence of attainment of milestone is same in all children.
- The process of development progresses in cephalocaudal direction and proximodistal direction.
- Certain primitive reflexes have to be lost before attainment of relevant milestone.
- The initial disorganized mass activity is gradually replaced by specific and willful actions.
- Development depends on maturation and learning.

##### Weight

The average weight of a neonate is 3 kg. In Indian children, 2.5–3.5 kg weight of a neonate is considered normal.

In the first few days after birth, newborn loses extracellular fluid equivalent to 10% of the body weight. So, there will be slight decline in the birth weight of the baby. The usual pattern of gaining weight is shown in the Table 1 as follows:



## Silverman-Andersen Retraction Scoring

	Upper chest retractions	Lower chest retractions	Xiphoid retractions	Nasal flaring	Nasal grunt
Grade 0	 Synchronized	 No retractions	 None	 None	 None
Grade 1	 Lag on inspiration	 Just visible	 Just visible	 Minimal	 Stethoscope only
Grade 2	 Seesaw	 Marked	 Marked	 Marked	 Naked ear

## Interpretation

TABLE 18	SILVERMAN-ANDERSEN SCORE AND INTERPRETATION
Score	Interpretation
0-3	Mild respiratory distress
4-6	Moderate respiratory distress
>6	Impending respiratory distress
10	Severe respiratory distress

## Gastric Shake Test

- 0.5 mL of gastric fluid is mixed with equal volume of NS and then with 95% ethanol and the mixture is agitated for 15 seconds.
- After standing for 15 minutes, the air-liquid interface was examined for bubbles.
- If no bubbles are present, then the test is NEGATIVE (very little surfactant is present).
- If bubbles are present right across the surface of the fluid, then the test is POSITIVE (adequate amounts of surfactant).

## KEY POINTS

- Silverman score is used to assess respiratory distress in preterm neonate.
- The maximum score in Silverman score is 10.

## FEEDING IN CHILDREN

Nutritional management influences immediate survival of as well as subsequent growth and development of low birth weight (LBW) infants.

TABLE 19 FEEDING IN CHILDREN ACCORDING TO BIRTH WEIGHT

Birth weight	Preferred method of feeding
<1250 g	Baby may need I/V fluids initially, then initiate orogastric feeding gradually
1250–1500 g	Most would need spoon/paladai while some need orogastric feeding
1501–2000 g	Most babies would accept breastfeeding while some might need paladai feeding
>2000 g	Breastfeed in normal birth weight baby, but with monitoring

## Breastfeeding

## Frequency of Feeds

- First few weeks: 8–12 times a day during first few weeks
- Demand feeding: 1–4 hours as per demand
- By 9–12 months: 3–5 meals

## KEY POINTS

## Signs of good attachment while breastfeeding

- Babies mouth should be wide open.
- Baby's chin touching mother's breast.
- Lower lip turned outward.
- More areola visible above than below.

**KEY POINTS & POINT TO REMEMBER**  
at your finger tips

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## Composition of Breast Milk

TABLE 20 COMPOSITION OF BREAST MILK		
Types of breast milk	Time	Appearance
Colostrum	First 3–4 days after birth	Yellowish and thick
Transitional milk	From days 4 to about 10–14 days	Thinner, lighter in color
Mature milk	2 weeks after baby is delivered	Thinner
Preterm milk	When a preterm baby is delivered	Higher in protein and immune factors
Foremilk	At the start of the feed	Watery
Hind milk	At the end of the feed	Thick

### KEY POINTS

- The first milk produced after delivery is known as Colostrum. It appears thick and yellow colored.
- Milk secreted following colostrum is transition milk.
- Foremilk (milk secreted at the start of feed) is rich in proteins, sugars and minerals whereas hindmilk is rich in fat and provides more energy.
- Immunoglobulin present in breast milk is IgA.
- Exclusive breastfeed should be provided to the baby up to 6 months.
- The extra calories needed by mother during breastfeeding is 500 calories.

## Nutrients in Breast Milk

TABLE 21 NUTRIENTS CONTENT IN BREAST MILK	
Component	Content/100 mL
Calories	71 kcal
Carbohydrates	7 g
Proteins	1.1 g
Fat	3.8–4.2 g
Lactose	7.0 g
Sodium	0.9 mEq/L
Potassium	1.4 mEq/L
Calcium	34 mg
Phosphorus	15 mg
Iron	0.05–0.1 mg/L
Zinc	120 micrograms
Vitamin A	170–670 IU
Vitamin C	5.2–10 mg
Vitamin D	0.5–10 IU
Vitamin E	0.56 micrograms
Vitamin K	1.5 micrograms
Water	88%
Protective factors	IgA, IgG, IgM, Bifidus factor, Lactoferrin, Lysozyme, Para-aminobenzoic acid

### KEY POINTS

- Human milk contains little iron, so infants who are exclusively breastfed are at increased risk of iron deficiency after 4 months of age. This is more common among preterm infants as they are born with lower iron stores
- A newborn who is adequately breastfed will sleep at least 2 hours, pass urine 8 to 10 times a day and will gain weight.
- Expressed breast milk can be stored at room temperature for up to 4 hours.
- Cow's milk is deficient of iron.
- Bottle-fed babies are more prone to develop diarrhea.



**KEY POINTS & POINT TO REMEMBER**  
at your finger tips

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## MECKEL'S DIVERTICULUM

- It is a congenital diverticulum arising from the antimesenteric border of terminal ileum.
- During the eighth week of gestation, incomplete obliteration of vitelline duct results in some congenital abnormalities, the **most common of which is Meckel's Diverticulum**.

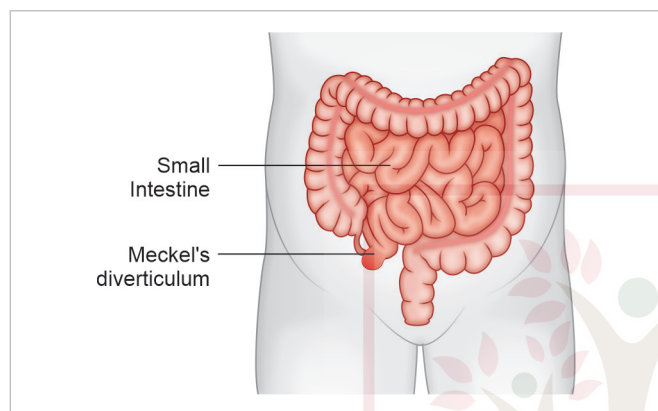


Figure 19: Meckel's diverticulum

### KEY POINT

Meckel's diverticulum is an outpouching or bulge in the lower part of the small intestine. The bulge is congenital (present at birth) and is a leftover of the umbilical cord.

## Clinical Manifestations

Mostly asymptomatic, painless rectal bleeding, nausea and vomiting, anemia.

## Diagnosis

Barium enema, Meckel scan, rectosigmoidoscopy

## Treatment

Diverticulum is removed under general anesthesia.

## UMBILICAL CORD ANOMALIES

### Umbilical Granuloma

- It is a small round, wet, often pink, pedunculated lesion measuring up to 1 cm arising from the base of umbilicus.
- Treatment includes cauterization with silver nitrate, ligation, use of alcoholic wipes and rarely surgical excision.

### Omphalitis

- Inflammation of cord stump or its surrounding tissue.
- It needs to be treated with antibiotics otherwise it may lead to umbilical phlebitis, portal vein thrombosis, liver abscesses, peritonitis.

### Umbilical Hernia

An umbilical hernia occurs when part of intestine bulges through the opening in abdominal muscles near umbilicus.

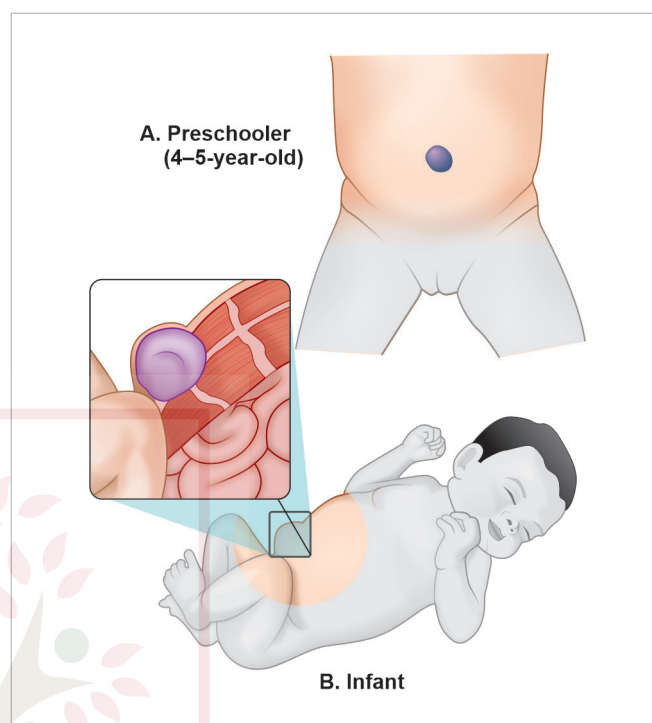


Figure 20: Umbilical hernia

## Omphalocele (Exomphalos)

- Omphalocele is a birth defect of the abdominal wall.
- The infant's intestines, liver or other organs stick outside of the belly through the belly button.
- The organs are covered in a thin, nearly transparent sac that hardly ever is open or broken.



Figure 21: Omphalocele





**"Sometimes the remedy is worse than the disease."**

—Francis Bacon

# MULTIPLE CHOICE QUESTIONS

## (Including Explained and Practice Questions)



### INTRODUCTION TO GROWTH & DEVELOPMENT

- Weight of the baby quadruples at:** (NORCET-7 2024)
  - 1 year
  - 2 years
  - 3 years
  - 4 years
- A neonate has a birth weight of <2.5 kg. The neonate will be classified as:** (NORCET-7 2024)
  - LBW
  - VLBW
  - ELBW
  - Normal weight
- Which of the following is age-independent anthropometry?** (NORCET-7 2024)
  - Height for age
  - Weight for age
  - Head circumference
  - MUAC
- Which of the following is the correct height velocity in children aged 2–10 years?** (NORCET-4 2023)
  - 8–18 cm/year
  - 4–6 cm/year
  - 2–4 cm/year
  - 6–8 cm/year
- Up to which age, height of the child is measured in lying down posture?** (NORCET-4 2023)
  - 12 months
  - 18 months
  - 24 months
  - 36 months
- A 6-month-old infant has developmental delays. His weight falls below the 5th percentile when plotted on a growth chart. A diagnosis of failure to thrive is made. What behaviors might indicate the possibility of maternal deprivation?** (NORCET-3 2022)
  - Responsive to touch, wants to be held
  - Uncomforted by touch, refuses bottle
  - Maintains eye-to-eye contact
  - Finicky eater, easily pacified, cuddly
- When does the child identify gender?** (NORCET-3 2022)
  - Between 7–8 years
  - At 3 years
  - At puberty
  - At 6 years
- A parent brings a toddler, aged 18 months, to the clinic for a regular check-up. When palpating the toddler's fontanels, what should the nurse expect to find?** (OSSSC [NO] 2022)
  - Closed anterior fontanel and open posterior fontanel
  - Open anterior fontanel and closed posterior fontanel
  - Closed anterior posterior fontanels
  - Open anterior and posterior fontanels
- The infant's weight becomes triple from birth weight in:** (Combined AIIMS [NO] 2020)
  - 1 year
  - 2 years
  - 3 years
  - None of these
- When does the posterior fontanel close in the baby?** (Combined AIIMS [NO] 2020)
  - 2 to 3 months
  - 2 to 3 years
  - 2 to 3 weeks
  - 2 to 3 days

- When does the infant's weight get double in relation to birth weight?** (Combined AIIMS [NO] 2020)
  - 5 months
  - 8 months
  - 10 months
  - 12 months
- The modern concept of pediatrics refers to:** (Safdarjung NO 2018)
  - Short term care of the child
  - Basic care of the child
  - Continuous and preventive care of the whole child
  - Terminally ill care of the child

**Explanation:** Pediatrics is defined as the branch of medical science that deals with child development and care during illnesses. As the major causes leading to under five mortality and morbidity are preventable in nature, the modern concept of pediatrics focuses on prevention of illness and promotion of health rather than treatment of illnesses alone.

- Which part of the brain controls and integrates activities of the autonomic nervous system?**
  - Hypothalamus
  - Epithalamus
  - Midbrain
  - Thalamus
- At what age can a child help in household chores, dress and undress independently?**
  - 2 years
  - 3 years
  - 4 years
  - 5 years

**Explanation:** Key social milestones achieved at five years of age include dressing and undressing, asking questions about meaning of words; engaging in domestic role-playing

- In language development, a child can tell stories by the age of:**
  - 1 year
  - 2 years
  - 3 years
  - 4 years
- Which of the following intervention is associated with the lowest recurrence rate in nocturnal enuresis?**
  - Desmopressin
  - Oxybutynin
  - Imipramine
  - Bed alarms

**Explanation:** Best success rate is seen with bed alarms which when goes off, child should get up and go to the toilet. Participation of parents is critical in success of this intervention. However, initial management is behavior modification like limiting fluid intake in evening hours and awakening the child during night to go to bathroom. Parents should avoid shaming of the child.

- Which of the following conditions can result from early strict toileting.**
  - Night terror
  - Temper tantrums
  - Encopresis
  - Nocturnal enuresis

**Explanation:** Night terrors refer to disconcerting episodes of, screaming or crying that a toddler or young child may experience at



**Ans.**

- b
- a
- d
- b
- c
- b
- b
- c
- a
- a
- a
- c
- a
- d
- d
- d
- a



# OBSTETRIC AND GYNECOLOGICAL NURSING

## SYNOPSIS

### ANATOMY OF FEMALE REPRODUCTIVE SYSTEM- OVERVIEW

The female reproductive system refers to the organs and structures involved in the production, transport, and nurturing of the female gamete (egg) and the development and birth of offspring.

It is broadly divided into three categories:

1. External genitalia
2. Internal genitalia
3. Accessory reproductive organs

#### External Genitalia

- External genitalia is also known as **vulva** or pudendum.

- It refers to the external structures of the female reproductive system.
- It plays an important role in sexual function.
- It provides a protective barrier for the internal reproductive organs.

#### Parts of External Genitalia (Vulva)

- **Mons pubis:** It is the fatty tissue above the pubic bone that is covered with pubic hair. The hair pattern is triangular among most women with, the base directed upward.
- **Labia majora:** Two folds of skin that extend down from the mons pubis and enclose the labia minora and other vulvar structures. It is **homologous to scrotum in males**. It has its own sweat gland and apocrine gland.

Nursing Knowledge Tree  
An Initiative by CBS Nursing Division

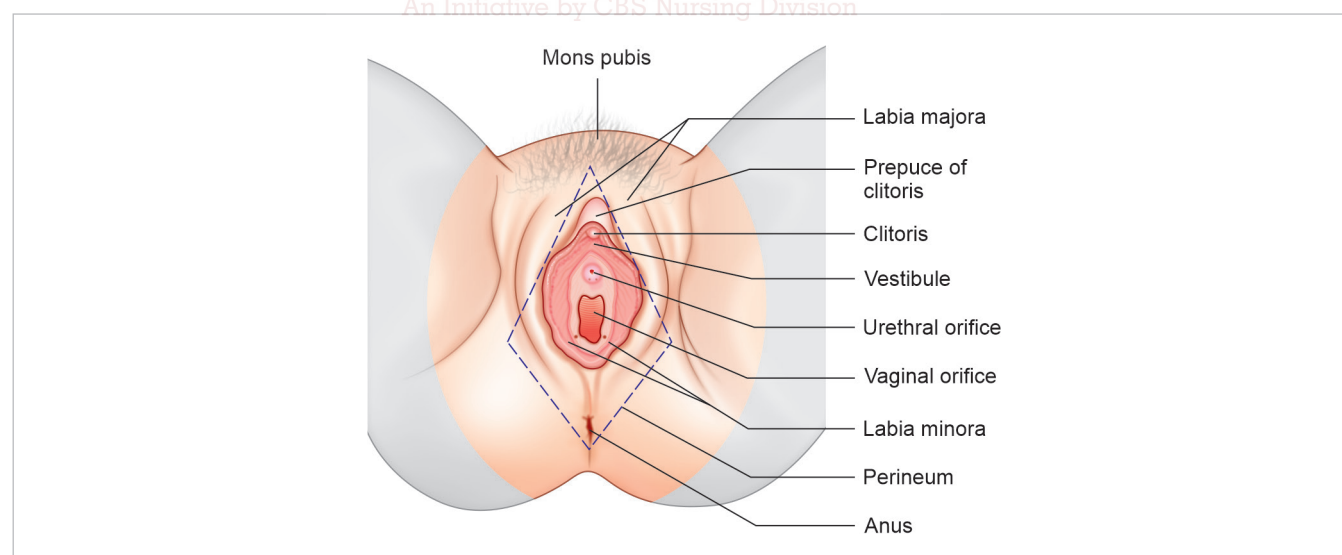
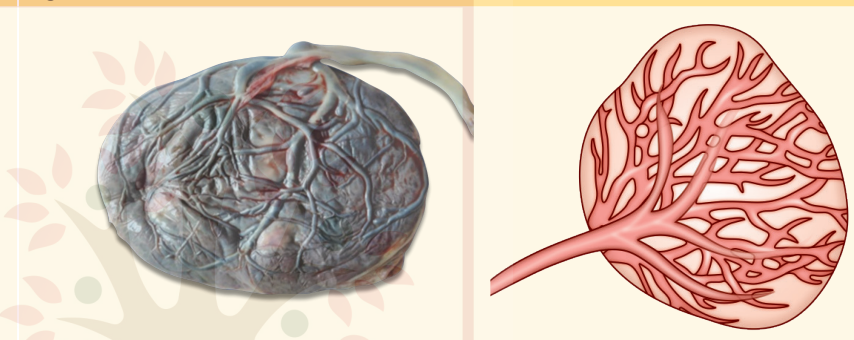

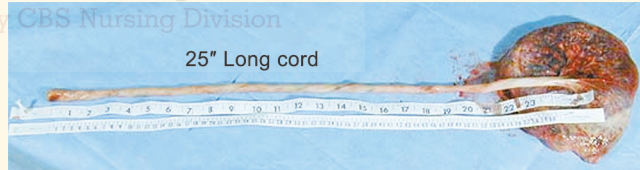
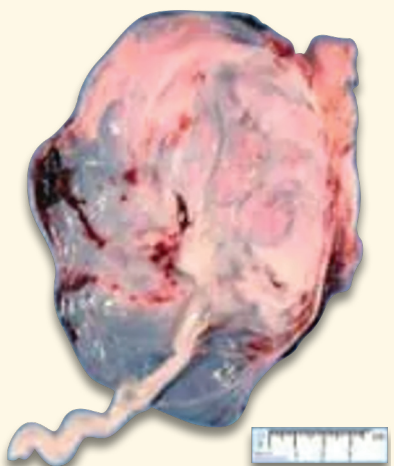


Figure 1: External genitalia

## KEY POINTS

- **Funis** is other name of the **umbilical cord**.
- There are **two arteries** and **one vein** present in the umbilical cord singleton pregnancy.
- Oxygenated blood enters the fetal circulation from umbilical vein *via* ductus venosus.
- Closure of the umbilical arteries takes about 2–3 months after delivery.
- Umbilical artery is not having internal elastic lamina but has got well-developed muscular coat which helps in the effective closure of artery following delivery.

## UMBILICAL CORD ABNORMALITIES

Cord abnormalities	Figures
<b>Battledore placenta:</b> <ul style="list-style-type: none"> <li>• Placental cord is attached to the margin.</li> <li>• The umbilical cord attaches to the placenta at &lt;2 cm from the edge.</li> </ul>	
<b>Velamentous placenta:</b> <ul style="list-style-type: none"> <li>• Cord is attached to the membrane instead of placenta.</li> <li>• So, umbilical vessels are unsupported and may lie below the presenting part and run across the cervical os and known as <b>vasa previa</b>.</li> </ul>	
<b>Long cord:</b> The length of the cord is >100 cm. Long cord may loop around the fetal neck and can also cause cord prolapse.	
<b>Short cord:</b> True short cord may be <20 cm. It may cause failure to the fetus to descend during the delivery. It may break easily and prevent version.	

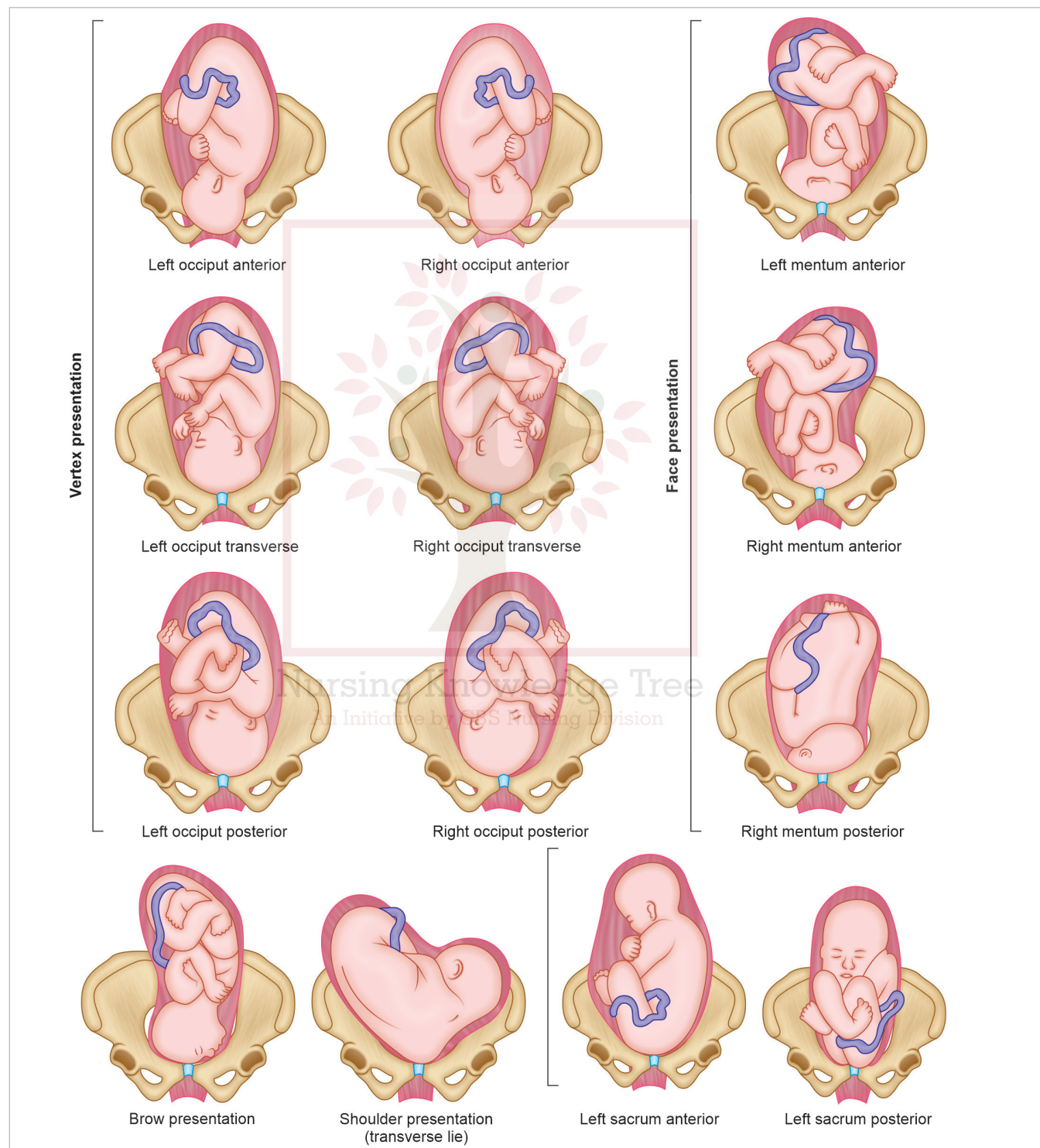
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## Positions and Presentations of Fetus During Labor

Different fetal presentations and positions during labor  
(Ref: See Figure in Appendices)



**Figure 31:** Position and presentation of fetus

**"Health is a state of complete harmony of the body, mind and spirit."**

—B.K.S. Iyengar



# MULTIPLE CHOICE QUESTIONS

## (Including Explained and Practice Questions)

### ANATOMY OF FEMALE REPRODUCTIVE SYSTEM

- The narrowest part of fallopian tube is:** (SNEHP 2022)
  - Infundibulum
  - Fimbriae
  - Ampulla
  - Interstitial portion
- Nurse is about to catheterize bladder of a pregnant lady. She should be aware that all the following facts about female urethra are true; except:** (OSSSC [NO] 2022)
  - It is about 1.5 inches in length.
  - It is posterior to vaginal orifice.
  - It pierces through urogenital diaphragm.
  - It is straight and offers minor resistance for catheterization.
- Acid medium of vagina maintained by:** (AIIMS Nagpur [NO] 2020)
  - Trichomonas vaginalis
  - E. coli
  - Staphylococci
  - Döderlein's bacilli
- The length of the fallopian tube ranges from:** (AIIMS Patna [NO] 2020)
  - 22–27 cm
  - 7–12 cm
  - 28–31 cm
  - 2–7 cm
- Peg cells are seen in the:** (AIIMS Patna [NO] 2020)
  - Intestine
  - Fallopian tubes
  - Stomach
  - Vagina
- The correct sequence of development of puberty in girls is:** (AIIMS Patna [NO] 2020)
  - Menarche, Pubarche, Thelarche
  - Thelarche, Pubarche, Menarche
  - Thelarche, Menarche, Pubarche
  - Pubarche, Menarche, Thelarche
- Which of the following is not true about female urethra?**
  - It is about 4 cm long
  - It is shorter than the male urethra
  - It is posterior to vaginal orifice
  - It is straight and offers minor resistance to catheterization
- Vulva is composed of which of the following structures?**
  - Vaginal introitus, labia majora, labia minora and cervix
  - Clitoris, vestibule and fourchette
  - Labia majora, labia minora and cervix
  - Cervix, uterus and ovary
- All of the following are parts of vulva; except:**
  - Bartholin's gland
  - Vaginal opening
  - Mons pubis
  - Ampulla

**Explanation:** The vulva consists of the external female sex organs. The vulva includes the mons pubis, labia majora, labia minora, clitoris, Vestibular bulbs, fourchette, vulval vestibule, urinary meatus, the vaginal opening, and Bartholin's and Skene's vestibular glands. The urinary meatus is also included as it opens into the vulval vestibule.

- Nerve supply to the vulva is through:**
  - Ilioinguinal nerve
  - Pudendal nerve
  - Genitofemoral nerve
  - All of these
- The structure that provides a pad of fatty tissue for the external female genitalia is:**
  - Perineum
  - Labia minora and majora
  - Mons pubis
  - Vulva
- Identify the part of uterus among the following?** (AIIMS Raipur Staff Nurse Grade-I 2018)
  - Body
  - Isthmus
  - Cervix
  - All of these

**Explanation:** The uterus has four major regions: Fundus, Body, Isthmus and cervix. So all three given options are parts of uterus.

- The most common anatomical position of the uterus is:**
  - Anteverted and anteфлекed
  - Retroverted and retroфлекed
  - Retroverted and anteфлекed
  - Anteverted and retroфлекed

**Explanation:** Normal uterus is anteverted and anteфлекed. The normal position is an anteverted uterus, which is tipped forward. The uterine position is also sometimes described in relation to the location of the fundus; that is, an anteфлекed uterus, which is normal and where the fundus tilts forward.

- The lower uterine segment is formed from the:**
  - Cervix
  - Isthmus and cervix
  - Body of the uterus
  - Isthmus
- Structures that support the uterus include:**
  - Round ligament
  - Broad ligament
  - Cervicovaginal junction
  - All of these
- The shape of nonpregnant uterus is:**
  - Globular
  - Pear shaped (pyriform)
  - Oval
  - Cylindrical
- True support of uterus:**
  - Broad ligament
  - Round ligament
  - Cardinal ligament
  - Uterosacral ligament
- Blood supply to the uterus is by:**
  - Ovarian artery
  - Uterine artery
  - Both a and b
  - None of these
- The origin of the ovaries is from:**
  - Genital ridge
  - Genital tubercle
  - Wolffian duct
  - Mullerian duct
- Ovarian artery is a branch of:**
  - Renal artery
  - Internal iliac artery
  - Abdominal part of the aorta
  - External iliac artery



**Ans.**

- d
- b
- d
- b
- b
- b
- c
- b
- d
- d
- c
- d
- a
- b
- d
- b
- c
- b
- a
- c



# APPLIED MICROBIOLOGY

## SYNOPSIS

### HISTORICAL PERSPECTIVES OF MICROBIOLOGY

- **Microbiology:** It is the study of microorganism which is only visible through microscope.
- Aristotle (384–322) and others believed that living organisms could develop from nonliving materials.
- Rogen Bacon in 13th century described that the disease caused by a minute 'seed' or 'germ'.
- **Antony van Leeuwenhoek (1632–1723):**
  - Provided detailed descriptions of protozoa, basic types of bacteria, yeasts, and algae.
  - Was the first to see and describe bacteria and their characteristic morphology.
  - Known as father of bacteriology and protozoology.
  - In 1676, he observed and described microorganisms such as bacteria and protozoa as 'animalcules'.
- Edward Jenner in 1798 introduces the concepts of vaccination using cowpox material to prevent smallpox.
- **Louis Pasteur:**
  - He made significant contributions to microbiology and introduced the concepts of aerobic and anaerobic organisms, referring to those that require oxygen and those that do not, respectively.
  - He disproved the theory of spontaneous generation.
  - He contributed to the development of the first vaccines for the immunization against rabies, anthrax, and chicken cholera.
  - He described the scientific basis for fermentation, winemaking, and the brewing of beer and pasteurization.
  - Pasteur postulated the **germ theory of disease**, which states that microorganisms are the causes of infectious disease.
- **Joseph Lister (1827–1912):** He is the father of antiseptic surgery.
- **Robert Koch:**
  - Discovered causative agent for anthrax, tuberculosis, and cholera.
  - His discoveries, in combination with those of Pasteur, established the germ theory of disease.

- **Edward Jenner (1749–1823):**
  - First to prevent small pox.
  - He discovered the technique of vaccination.
- **Alexander Fleming:** Discovered penicillin in 1929, an antibiotic produced by a fungus that inhibits bacterial growth.
- **Paul Ehrlich:** In 1882, he reported the acid-fast staining properties of tubercle bacillus.

### KEY POINTS

- **Louis Pasteur (1822-1895)** is considered the father of microbiology.
- **Louis Pasteur introduced sterilization** technique and stem sterilizer, autoclave and hot air oven.
- **Louis Pasteur** introduced first live-attenuated vaccine.
- **Robert Koch** is known as the **father of bacteriology**.
- **Robert Koch** introduced **staining technique**.
- **Robert Koch** discovered anthrax bacillus, tubercle bacillus and the cholera vibrios.
- **Karl Landsteiner** discovered **ABO blood groups**.

### NORMAL BACTERIAL FLORA OF HUMAN BODY

#### Resident Flora

These organisms are relatively fixed and regular type of organism found at a given body site. They perform functions such as synthesis of vitamin K, absorption of nutrient, breakdown of nutrients, etc.

#### Transient Flora

These are nonpathogenic and potentially pathogenic organisms. These microorganisms do not produce disease under normal circumstances. But if normal flora is destroyed and immune system is weak then they may produce disease.



## Normal Flora

TABLE 1 NORMAL FLORA OF VARIOUS BODY SITES	
Body sites	Name of normal flora
Eye (conjunctiva)	<i>Corynebacterium xerosis</i> , coagulase negative staphylococci, nonhemolytic streptococci.
Mouth and upper respiratory tract	<i>Streptococcus viridans</i> , diphtheroids, coagulase negative staphylococci, anaerobic cocci, anaerobic spirochetes, bacteroides, anaerobic cocci, <i>fusobacterium</i> .
Gastrointestinal tract	Lactobacilli, anaerobic streptococci, <i>Clostridium</i> , <i>Bacteroides</i>
Genitourinary	<i>Mycobacterium smegmatis</i> , alpha hemolytic streptococci, lactobacilli, <i>Gardnerella vaginalis</i> , and <i>Bacteroides spp</i> , anaerobic Streptococci, Clostridia, <i>Ureaplasma urealyticum</i>
Skin	<i>Staphylococcus epidermidis</i> (major), <i>Staphylococcus aureus</i> , Micrococci, Diphtheroids, Propionibacterium, Yeast ( <i>Candida sp.</i> )

### KEY POINTS

#### Advantages of normal flora:

- Normal flora competes with pathogens for colonization sites.
- It produces substances that inhibit pathogens.
- Normal flora stimulates local immunity.
- It produces vitamins in the intestines.

#### Disadvantages of normal flora:

- Source of opportunistic infection in immunosuppressed patients.
- **Oral cavity:** Normal flora of oral cavity causes Plaque formation and dental disease.
- **GI tract:** *Helicobacter pylori*, a part of the gastric flora, may cause gastric and duodenal ulcers.
- **Colon:** Some gut bacteria are associated with colorectal cancer.

## STAINING TECHNIQUES

- **Simple stain:** Methylene blue
- **Negative stain:** It produces uniform colored background against which uncolored organism stand out, e.g., India ink preparation.
- **Impregnation stains:** Cells and structures that are too thin to be visualized by the light microscope can be rendered visible by impregnation of silver on their surface.

### Differential Stain

- Gram stain
- Acid-fast stain
- Albert's stain

### Gram Stain

- Developed by Christian Gram in 1884.
- It is used to study morphology of bacteria.
- When bacteria are treated with basic dyes such as methyl violet, crystal violet or gentian violet and then with iodine, they retain their color even after decolorization with alcohol/acetone. The microorganisms which retain the color and appear violet in color are called Gram-positive bacteria. On the other hand, microorganisms that are decolorized will take up the counterstain, appearing red or pink, and are classified as Gram-negative.

### Acid-Fast Stain

- Normal dyes do not penetrate Mycobacterium. Therefore, the dye containing phenol and application of heat enables it to penetrate the cell wall of mycobacteria. Once the bacteria are stained then they withstand the action of powerful decolorizing agent for a considerable duration of time.
- Acid-fast bacilli (AFB) appear as bright-red structure, whereas tissue, other organisms are seen as blue/green depending upon the counterstain used.

### Albert's Stain

- It is used to stain the volutin granules of **diphtheria bacilli**.
- These granules have intense affinity toward basic dyes.

## TYPES OF MICROSCOPE

- Light microscopes (Compound microscope)
- Fluorescence microscope
- Dark ground microscope
- Phase contrast microscope
- Interference microscope
- Electron microscope

## CULTURE MEDIA

### Solid Media, Liquid Media and Semisolid Media

- In culture media, agar is the agent used for solidifying purpose.
- By varying the concentration of agar, media can be prepared as solid/semisolid.
- Solid media, e.g., blood agar, chocolate agar, MacConkey's agar.
- Liquid media, e.g., nutrient broth, peptone water, sugar media and enrichment media.

### Aerobic and Anaerobic Media

#### Aerobic

To promote the growth of aerobic organisms, aerobic media is used.  
**Example:** *E. coli*, *Salmonella serotypes*, *Mycobacterium tuberculosis*, etc.

#### Anaerobic

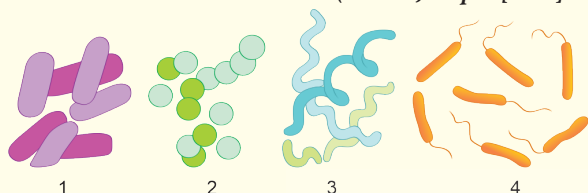
- Organisms that are unable to use oxygen are known as anaerobic organisms.



## CLASSIFICATION OF BACTERIA

16. You have collected pus sample from a purulent lesion on the skin of a patient. You have sent the sample for gram staining. The microbiologist reports Staphylococci seen. Which of the below shapes of bacteria must the microbiologist have seen?

(AIIMS Jodhpur [SNO] 2023)



1. 2. 3. 4.  
a. 4 b. 2  
c. 1 d. 3

17. The size of bacteria is usually expressed in terms of:

(AIIMS Bibinagar [Tutor] 2023)

- a. Nanometers b. Millimicrons  
c. Angstroms d. Micrometers

18. The bacteria that can cause acute diarrhoeal disease is:

(AIIMS Bibinagar [Tutor] 2023)

- a. E. histolytica b. Trichomoniasis  
c. Salmonella d. Trichuriasis

19. Spherical bacteria occurring in cluster are called:

(SNEHP 2022)

- a. Staphylococci b. Streptococci  
c. Pneumococci d. Cocobacilli

20. The media to grow bacteria is known as: (SNEHP 2022)

- a. Nutrition media b. Culture media  
c. Culture forum d. Culture biosphere

21. Amphitrichous flagella means: (SNEHP 2022)

- a. Flagella all-round the cell b. Flagella at both ends  
c. Flagella at one end d. Flagella in tufts

22. What is an example of monera microorganisms?

(Western Coalfields Limited 2022)

- a. Eubacteria b. Protozoans  
c. Invertebrates d. Mosses and ferns

23. What is the shape of Bacillus tuberculosis bacteria?

(Western Coalfields Limited 2022)

- a. Ellipsoidal/Spherical b. Filamentous  
c. Rod-shaped d. Vibrio or Coma

24. Which of the following bacterial structures is involved in attachment to cell surface? (Western Coalfields Limited 2022)

- a. Flagella b. Fimbriae  
c. Capsule d. Mesosomes

25. Generation time of Mycobacterium tuberculosis is:

(Gujarat Nursing Service [NO/Principal] 2022)

- a. 10 hours b. 20 hours  
c. 20 days d. 10 days

26. Which of the following causative organism is responsible for Moniliaiasis? (CNCI [NO] 2021)

- a. Candida albicans b. Tinea cruris  
c. Staphylococcus aureus d. Gonococci

27. An acid-fast bacillus which is pathogenic:

(AIIMS Nagpur [NO] 2020)

- a. Bacillus pertussis  
b. Corynebacterium diphtheriae  
c. Salmonella typhi  
d. Mycobacterium leprae

28. The causative agent of Lyme disease is:

(AIIMS Patna [NO] 2020)

- a. Rickettsia prowazekii  
b. Alphavirus  
c. Borrelia burgdorferi  
d. Trypanosoma brucei gambiense

29. Which of the following microorganisms causes gonorrhea? (AIIMS Patna [NO] 2020)

- a. Stylus gonorrhea b. Streptococcus pneumoniae  
c. Stereotyost gonorrhea d. Neisseria gonorrhoea

30. Rod-shaped bacteria are called: (AIIMS Patna [NO] 2020)

- a. Cocci b. Clusters  
c. Bacillus d. Spirochetes

31. Which of the following is the most common cause of ophthalmic neonatorum? (AIIMS Patna [NO] 2020)

- a. Candida albicans b. Staphylococcus aureus  
c. Neisseria gonorrhoea d. Streptococcus

32. A cluster of polar flagella is called: (Safdarjung NO 2018)

- a. Lophotrichous  
b. Amphitrichous  
c. Monotrichous  
d. Peritrichous

## Explanation:

- **Lophotrichous:** The flagella are present in the form of a cluster at one pole.
- **Amphitrichous:** When a single or clusters of flagella are present at both ends.
- **Monotrichous:** When a single polar flagellum is present on bacteria.
- **Peritrichous:** When flagella are lateral and surround the whole surface of bacteria.
- **Atrichous:** No flagella

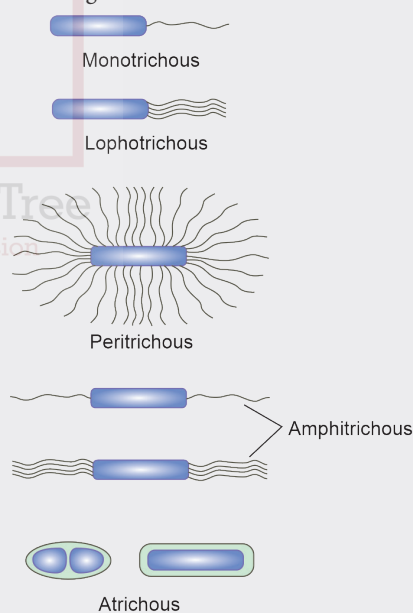


Figure: Types of flagellar arrangement in bacteria

33. Depending upon their oxygen requirement and metabolism Vibrio Cholerae species are: (Safdarjung NO 2018)

- a. Obligate aerobes b. Facultative anaerobes  
c. Obligate anaerobes d. Microaerophilic

**Explanation:** *Vibrio cholerae* are aerobes and facultative anaerobes. Facultative anaerobe is organism which forms ATP by aerobic respiration in presence of oxygen, but is capable of switching to fermentation or anaerobic respiration in the absence of oxygen.

Ans.

16. b  
17. d  
18. c  
19. a  
20. b  
21. b  
22. a  
23. c  
24. b  
25. b  
26. a  
27. d  
28. c  
29. d  
30. c  
31. c  
32. a  
33. b



# APPLIED BIOCHEMISTRY AND NUTRITION

## SYNOPSIS

### APPLIED BIOCHEMISTRY

#### INTRODUCTION

- Biochemistry is the study of chemical processes within the body and related to the living organisms.
  - The first enzyme discovered was 'diastase' (now called 'amylase') in the year 1833.
  - James Watson, Francis Crick, Maurice Wilkins, and Rosalind Franklin (1950s) contributed to the **helical structure of DNA**.
- The term Biochemistry was coined in 1903 by a German chemist named Carl Alexander Neuberg (1877–1956). He is regarded as 'Father of modern biochemistry'.

#### CELL

- The cell is the structural and functional unit of life.
- Living cells are divided into two groups:**
  - Prokaryotes, e.g., Bacteria (unicellular)
  - Eukaryotic cells, e.g., Animal cells, plant cells, fungi and protozoa (unicellular or multicellular)

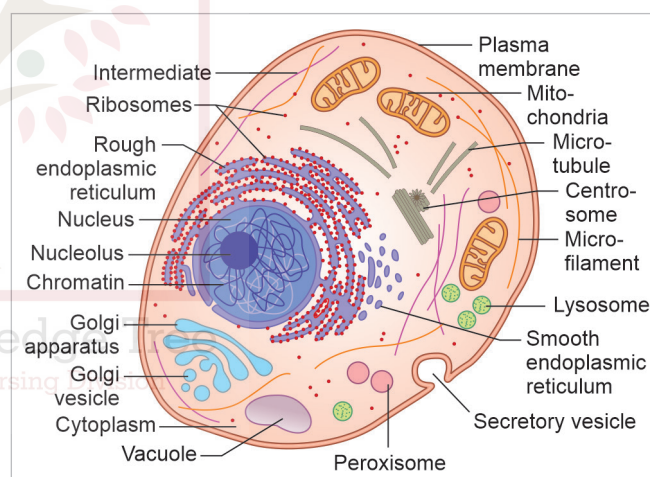


Figure 1: Animal cell structure

TABLE 1	DIFFERENCES BETWEEN PROKARYOTIC CELLS AND EUKARYOTIC CELLS	
Parameters	Prokaryotic cells	Eukaryotic cells
Cell size	Small (1–10 nm)	Large (1 to 10,000 times larger in size than prokaryotic cells)
Overall organization	Simple	Complex
Cell wall	Present	Absent
Cell membrane	Present sometimes surrounded by capsule	Present
Nucleus	Single nucleus which contains double helical DNA that is present in a poorly defined region called nucleoid	Well-defined nucleus with a membrane and multiple DNA double helices organized into chromatin
Reproduction	Asexual	Sexual
Examples	Bacteria, blue green algae	Animal and plant cells

#### CELL ORGANELLES

##### Nucleus

- Nucleus is the largest component of the cell, containing DNA organized into separate chromosomes.
- Nucleus is surrounded by the nuclear membrane. Nuclear membrane consists of two layers.
- The intermembrane space between inner and outer membrane is known as **perinuclear space (cisterns)**.
- The nucleus is filled with nucleoplasm which contains **nucleolus** and **chromatin**.
- Function of nucleus includes control of cell division (DNA replication), protein synthesis.
- DNA and DNA polymerase are the markers of the nucleus.

##### Endoplasmic Reticulum

- Cisternae have a role in the exchange of materials between the cell and the extracellular fluid.
- Rough endoplasmic reticulum (RER):** Also called granular type of endoplasmic reticulum. It contains ribosomes.
- Smooth endoplasmic reticulum (SER):** Also called agranular type of endoplasmic reticulum. It does not contain ribosomes. SER has enzymes for biosynthesis of lipids and glycoproteins.

Contd...



**217. The enzyme which helps for the digestion of fat after emulsification is:**

(Gujarat Nursing Service [NO/Principal] 2022)

- |           |            |
|-----------|------------|
| a. Renin  | b. Amylase |
| c. Lipase | d. Trypsin |

**218. Emulsification of lipids in the small intestine requires:**

(AIIMS Patna [NO] 2020)

- |                      |               |
|----------------------|---------------|
| a. Gastric lipase    | b. Pepsin     |
| c. Pancreatic lipase | d. Bile salts |

**219. Which of the following nutrient provides energy to the body?**

(AIIMS Patna [NO] 2020)

- |              |              |
|--------------|--------------|
| a. Fat       | b. Zinc      |
| c. Vitamin A | d. Vitamin D |

**220. An average healthy person with no diseases should ideally get \_\_\_\_\_ of his/her daily calorie requirements from healthy fats.**

(AIIMS Patna [NO] 2020)

- |               |               |
|---------------|---------------|
| a. 50% to 60% | b. 70% to 80% |
| c. 20% to 30% | d. 5% to 10%  |

**221. Calories generated per gram of fat is approximately:**

(AIIMS Patna [NO] 2020)

- |            |             |
|------------|-------------|
| a. 4 kcals | b. 15 kcals |
| c. 1 kcals | d. 9 kcals  |

**222. Which of the following enzymes converts fats into fatty acids and glycerol?**

(AIIMS Patna [NO] 2020)

- |                     |                |
|---------------------|----------------|
| a. Bile             | b. Trypsinogen |
| c. Salivary amylase | d. Lipase      |

**223. Deficiency of essential fatty acids causes:**

- Dermatitis
- Growth retardation
- Reproductive failure
- All of these

**224. Rancidity of fat is due to:**

- Auto-oxidation of hydrogenated unsaturated fatty acids
- Hydrogenation of unsaturated bond
- Growth of microorganisms
- None of the above

**225. PUFAs are mostly found in:**

- Vegetable oils
- Animal foods
- Butter
- Ghee

**226. Linoleic acid is found mostly in:**

- Sunflower oil
- Corn oil
- Hemp oil
- All of these

**227. Cholesterol is required for:**

- Formation of bile
- Precursor for all steroid hormones
- Formation of vitamin D
- All of the above

**228. A lipid bilayer is permeable to:**

- |           |              |
|-----------|--------------|
| a. Urea   | b. Potassium |
| c. Sodium | d. Glucose   |

**229. Biological lipid bilayers contain the following lipids:**

- |                  |                  |
|------------------|------------------|
| a. Cholesterol   | b. Linoleic acid |
| c. Palmitic acid | d. Stearic acid  |

**230. Cholesterol is synthesized from:**

- |                            |            |
|----------------------------|------------|
| a. Acetyl CoA              | b. Maltate |
| c. Alpha-Ketoglutaric acid | d. Oxalate |

**231. Which cholesterol is designated as "Good Cholesterol"?**

- |         |        |
|---------|--------|
| a. VIDL | b. LDL |
| c. HDL  | d. IDL |

## PROTEINS & AMINO ACIDS

**232. Which semi-essential amino acid synthesis is decreased during pregnancy and lactation?**

(AIIMS Bibinagar [Tutor] 2023)

- |             |               |
|-------------|---------------|
| a. Tyrosine | b. Tryptophan |
| c. Arginine | d. Methionine |

**233. The structural protein in which the double helix structure of DNA is twisted and wrapped to maintain its heavily coiled three-dimensional shape is:**

(AIIMS Bibinagar [Tutor] 2023)

- |              |               |
|--------------|---------------|
| a. Histones  | b. Adenine    |
| c. Chromatin | d. Nucleotide |

**234. Egg is NOT the significant source of:**

(NORCET-3 2022)

- |                  |                 |
|------------------|-----------------|
| a. Vitamin D     | b. Vitamin A    |
| c. Whole protein | d. Carbohydrate |

**235. Nonessential amino acid is:**

(SNEHP 2022)

- |             |                  |
|-------------|------------------|
| a. Tyrosine | b. Phenylalanine |
| c. Lysine   | d. Threonine     |

**236. One of the following is not a simple protein:**

(Gujarat Nursing Service [NO/Principal] 2022)

- |              |                 |
|--------------|-----------------|
| a. Albumins  | b. Glutelins    |
| c. Prolamins | d. Glycoprotein |

**237. One of the following is known as the protein factory of cells:**

(Gujarat Nursing Service [NO/Principal] 2022)

- |                 |              |
|-----------------|--------------|
| a. Ribosomes    | b. Cytoplasm |
| c. Golgi bodies | d. DNA       |

**238. Which of the following digestive enzymes present in gastric juice is primarily responsible for breaking down proteins?**

(AIIMS Patna [NO] 2020)

- |               |                 |
|---------------|-----------------|
| a. Trypsin    | b. Pepsin       |
| c. Peptidases | d. Chymotrypsin |

**239. Which of the following is an essential amino acid?**

(AIIMS Patna [NO] 2020)

- |               |             |
|---------------|-------------|
| a. Niacin     | b. Thiamine |
| c. Pyridoxine | d. Valine   |

**240. The most abundant plasma protein is:**

- |            |               |
|------------|---------------|
| a. Albumin | b. Fibrinogen |
| c. Gelatin | d. Globulin   |

**241. Building block of protein is:**

- |                |                |
|----------------|----------------|
| a. Glucose     | b. Lipids      |
| c. Fatty acids | d. Amino acids |

**242. Primary structure of proteins represents:**

(Safdarjung NO 2018)

- Linear structure of proteins joined by peptide bonds
- 3-dimensional structure of proteins
- Helical structure of proteins
- Sub unit structure of proteins

### Explanation:

- Primary structure of proteins represents linear sequence of proteins (known as primary structure) joined by peptide bonds. The structure of proteins is complex and has been divided into four levels, according to organization: Primary, secondary, tertiary and quaternary.
- Tertiary structure of proteins is three dimensional.
- Secondary structure of proteins is helical.
- Subunit structures of proteins are polypeptide chains.

**Ans.**

217. c
218. d
219. a
220. c
221. d
222. d
223. d
224. a
225. a
226. d
227. d
228. a
229. a
230. a
231. c
232. c
233. a
234. d
235. c
236. d
237. a
238. b
239. d
240. a
241. d
242. a

**268. Which of the following occurs due to vitamin B<sub>12</sub> deficiency?**  
(NORCET-7 2024)

- a. Iron deficiency anemia      b. Megaloblastic anemia  
c. Pernicious anemia      d. Hemolytic anemia

**269. Which of the following is a rich dietary source of Vitamin D?**  
(AIIMS Bibinagar [Tutor] 2023)

- a. Broccoli      b. Oily fish  
c. Squid      d. Octopus

**270. Which of the following is a rich dietary source of Vitamin K?**  
(AIIMS Bibinagar [Tutor] 2023)

- a. Green leafy vegetables      b. Fish  
c. Egg      d. Carrot

**271. Night blindness is caused due to the deficiency of vitamin:**  
(SCTIMS [NO] 2023)

- a. A      b. D  
c. E      d. K

**272. Which one of the following vitamins is not fat-soluble?**  
(SCTIMS [NO] 2023)

- a. A      b. D  
c. B      d. K

**273. The major mineral element of the body is:**  
(UPUMS [NO] 2023)

- a. Iron      b. Sodium  
c. Potassium      d. Calcium

**274. All of the following are fat soluble vitamins; except:**  
(UPUMS [NO] 2023)

- a. Vitamin B<sub>12</sub>      b. Vitamin D  
c. Vitamin A      d. Vitamin K

**275. Where does the absorption of calcium take place?**  
(UPUMS [NO] 2023)

- a. Ileum      b. Jejunum  
c. Antrum of stomach      d. Duodenum

**276. Night blindness is due to the deficiency of:**  
(NORCET-3 2022)

- a. Vitamin A      b. Vitamin C  
c. Vitamin D      d. Vitamin B<sub>12</sub>

**277. Rickets in children is caused by:**  
(NORCET-3 2022)

- a. Vitamin D      b. Vitamin C  
c. Vitamin A      d. Vitamin B<sub>12</sub>

**278. Wernicke's and Korsakoff in alcoholic patient occurs due to the deficiency of:**  
(NORCET-3 2022)

- a. Thiamine      b. Vitamin C  
c. Vitamin D      d. Vitamin A

**279. All of the following help in the absorption of iron, except:**  
(NORCET-3 2022)

- a. Curd      b. Sprouts  
c. Amla      d. Orange

**280. The richest natural source of vitamin A is:** (SNEHP 2022)

- a. Carrot      b. Butter  
c. Peas      d. Cod liver oil

**281. Daily requirement of Vitamin C for adults is:** (SNEHP 2022)

- a. 10 mg  
b. 40 mg  
c. 50–100 mg  
d. 100–300 mg

**282. What is the biological function of copper?**  
(Western Coalfields Limited 2022)

- a. Helps in muscle contraction.  
b. Cofactor for several enzymes  
c. Helps in the transmission of nerve impulses.  
d. Involved in the synthesis of thyroid hormones.

**283. Figure out the micronutrient from the following:**  
(Western Coalfields Limited 2022)

- a. Protein  
b. Fat  
c. Mineral  
d. Carbohydrate

**284. What is the function of phosphorus?**  
(Western Coalfields Limited 2022)

- a. Development of bones and teeth  
b. Regulations of pH of body fluids.  
c. Regulation of muscle contraction.  
d. Role in transmission of nerve impulses.

**285. Which of the following is a fat soluble vitamin?**  
(Western Coalfields Limited 2022)

- a. Pyridoxine (vitamin B<sub>6</sub>)  
b. Ascorbic acid (vitamin C)  
c. Tocopherol (Vitamin E)  
d. Thiamine (vitamin B<sub>1</sub>)

**286. Main function of vitamin C in the body is:**  
(OSSSC [NO] 2022)

- a. Coenzyme for energy metabolism  
b. Regulation of lipid synthesis  
c. Involvement as antioxidant  
d. Inhibition of cell growth

**287. The nutrient that provides the body's preferred energy source:**  
(OSSSC [NO] 2022)

- a. Fat  
b. Protein  
c. Vitamin  
d. Carbohydrate

**288. Vitamin which is also known as antisterility vitamin:**  
(Gujarat Nursing Service [NO/Principal] 2022)

- a. Vitamin C  
b. Vitamin E  
c. Vitamin A  
d. Vitamin K

**289. The mineral which acts as a cofactor for other enzyme is:**  
(Gujarat Nursing Service [NO/Principal] 2022)

- a. Iron  
b. Calcium  
c. Potassium  
d. Sodium

**290. The vitamin which is produced by the bacteria living in the colon is:** (Gujarat Nursing Service [NO/Principal] 2022)

- a. Vitamin K  
b. Vitamin A  
c. Vitamin B  
d. Vitamin D

**291. Which of the following vitamin deficiency will cause pernicious anemia?**  
(NORCET-1 2020)

- a. Vitamin B<sub>12</sub>  
b. Folic acid deficiency  
c. Serum iron deficiency  
d. Calcium deficiency

**292. Which of the following vitamin deficiency leads to bleeding gums?**  
(NORCET-1 2020)

- a. Vitamin C  
b. Vitamin A  
c. Vitamin B  
d. Vitamin K

Ans.

268. b  
269. b  
270. a  
271. a  
272. c  
273. d  
274. a  
275. d  
276. a  
277. a  
278. a  
279. a  
280. d  
281. c  
282. b  
283. c  
284. a  
285. c  
286. c  
287. d  
288. b  
289. c  
290. a  
291. a  
292. a



## APPLIED SOCIOLOGY AND PSYCHOLOGY

### SYNOPSIS

#### APPLIED SOCIOLOGY

#### INTRODUCTION

- Sociology is the study of social life, social change, and the social causes and consequences of human behavior.
- Anthropology is the study of what makes us human.
- An individual is a person with unique identity, may be similar to siblings but not exactly same except in case of twins.
- The word 'sociology' was coined by **Auguste Comte**, a French Philosopher, in 1839.
- **Auguste Comte** is considered the 'Father of Sociology'.

#### SOCIALIZATION

Socialization is a lifelong process which starts at birth and continues till death. At each distinct phase in life, there are transitions to be made or crises to be overcome.

#### Importance of Socialization

- Socialization helps an individual make transitions and adapt to the changing environment.
- Process of socialization includes the elements and agencies of socialization such as family, formal educational system (school, college), peer group, media and technology, religion, government, legal system, and workplace.
- Socialization starts at birth.
- Socialization is innate and unavoidable.

#### Elements of Socialization

- The **physical** and **psychological background** of an individual.
- The **environment** in which an individual is born.
- The **culture** in which an individual's rearing is done.

#### Features of Socialization

- **Imitation:** It refers to copying the acts of others.

- **Suggestion:** It is a process of communication in which the suggested idea is accepted without logical grounds.
- **Identification:** In the very early stages, a child cannot make any distinction between themselves and their environment. Most initial reactions are just natural and spontaneous. As the child grows older, they learn to identify the means through which they satisfy their needs.
- **Language:** It refers to the medium of expression.

#### Phases of Socialization

- **Primary socialization:**
  - It takes place in infancy and childhood.
  - This is the most crucial stage of socialization, as the basic behavior pattern is learnt by the child at this stage.
  - **Internalization of norms** is the **most important aspect** of primary socialization.
- **Secondary socialization:** It starts from the later stage of childhood and goes up to maturity.
- **Anticipatory socialization:**
  - It is the kind of learning which describes a person's future roles.
  - Anticipatory socialization makes the individual expect their own participation in a social situation by watching how others would behave in that situation.
  - **Merton** coined the term 'anticipatory socialization'.
- **Developmental socialization:** As individuals grow, they change and mold themselves according to the standards and needs of the society.
- **Resocialization:**
  - It is a process by which one's sense of social values, beliefs, and norms are re-engineered.
  - Resocialization is a kind of learning that involves the learning of new ways of thinking, feeling and behaving that are completely different from one's previous way of life. For example, resocialization occurs when one converts into a different religion or joins army or is put in a prison.



### Population Explosion in India

- The year 1921 is referred to as “The Great Divide” in India because it marked a significant shift with low mortality rates and high birth rates.
- At the time of India’s Independence in 1947, the population stood at around 34 crores (340 million).
- Population explosion in India started from 1951 onward. According to the 2011 census, India’s population reached approximately 121 crores (1.21 billion).
- It is estimated that around 33 births occur every minute in India, indicating a high population growth rate.
- India was the first country to launch a family planning program with the goal of reducing the fertility rate to 2.1 by 2025. Family planning initiatives aim to promote reproductive health and provide access to contraception and reproductive health care services.

#### KEY POINTS

- **World Population Day** is observed on 11 July every year.
- Population explosion refers to a **rapid increase in the population of a region over a short period**.
- Population explosion in India started from 1951 onward.
- High birth rates and fertility rates contribute to population explosion.
- Uttar Pradesh is the most populated state in India.
- The term ‘gateway drug’ refers to a substance that may **lead to the use of more dangerous and addictive substances**.

### Unplanned Urbanization

Urbanization is the process of shift in population from rural areas to urban areas for employment opportunities, better wages, better education and healthcare facilities. However, when this process occurs rapidly and without adequate planning, it creates significant social problems.

Unplanned urbanization leads to:

- Overcrowding and slum development due to insufficient housing.
- Strain on public infrastructure such as transportation, sanitation, water supply, and healthcare.
- Increased unemployment and underemployment in urban areas.
- Environmental degradation, pollution, and loss of green spaces.
- Social inequality and rise in urban poverty.
- Health hazards caused by poor living conditions in congested areas.
- Breakdown of community life and weakening of traditional social structures.

#### Classification of Cities Based on Size (as per Census of India 2011)

- **Town:** Comprises 5000–50,000 people.
- **City:** Comprises 50,000 people and above.
- **Metropolitan cities:** Comprises population of 4 million or above.
- **Urban agglomeration:** It is a continuous urban spread constituting a town and its adjoining outgrowths (OGs) or two or more contiguous towns together with or without outgrowths of such towns.

## APPLIED PSYCHOLOGY

### INTRODUCTION

Psychology is the scientific study of the human mind and behavior. It explores various aspects of human cognition, emotion, perception, motivation, personality, and social interactions. Wilhelm Wundt, a German psychologist, is considered the Father of Psychology.

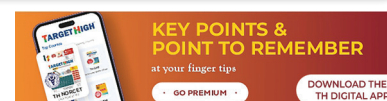
### PURE PSYCHOLOGY VERSUS APPLIED PSYCHOLOGY

- **Pure psychology:** It is also known as theoretical or academic psychology. It provides framework and theories for the sake of advancing knowledge and understanding in the field.
- **Applied psychology:** It refers to the practical application of psychological principles and theories to address real-world

problems and improve people’s lives. Applied psychologists utilize the knowledge gained from pure psychology and apply it to specific areas.

#### KEY POINTS

- Psychology is the positive science of behavior  
—**Wilhelm Wundt**
- **Gestalt psychology** was founded in Germany around 1912 by Max Wertheimer and his colleagues.
- Gestalt psychologists believed that the mind should be understood as perceiving whole patterns of sensory activity and the organization of relationships within those patterns.



"Early to bed and early to rise, makes a man healthy, wealthy, and wise."

—Benjamin Franklin



# MULTIPLE CHOICE QUESTIONS (Including Explained and Practice Questions)

## APPLIED SOCIOLOGY

### INTRODUCTION TO SOCIOLOGY

1. Which among the following is said to be twin sister of sociology? (Western Coalfields Limited 2022)

- a. Psychology
- b. Anthropology
- c. Political science
- d. Economics

2. Who is the father of sociology? (Western Coalfields Limited 2022 AIIMS Patna [NO] 2020)

- a. Max Weber
- b. Auguste Comte
- c. Karl Max
- d. Herbert Spencer

3. Which of the following is not a stage of socialization? (AIIMS Patna [NO] 2020)

- a. Oral stage
- b. Despair stage
- c. Oedipal stage
- d. Latency stage

4. Socialization is a process involving: (AIIMS Patna [NO] 2020)

- a. Declaring everything as belonging to society
- b. Setting up the social norms
- c. Inducting people to adapt in society
- d. Normalization of criminals and anti-social elements

5. Who said that man is a social animal? (AIIMS Patna [NO] 2020)

- a. MacIver
- b. Auguste Comte
- c. Aristotle
- d. Ginsberg

6. Who coined the term "sociology" and is considered the Father of Sociology?

- a. Karl Marx
- b. Auguste Comte
- c. Max Weber
- d. Emile Durkheim

7. Which of the following school of thought believes that the scope of sociology should be limited to the study of social institutions?

- a. Formalistic school
- b. Synthetic school
- c. Symbolic interactionism
- d. Structural functionalism

**Explanation:** The formalistic school of thought believes that the scope of sociology should be limited to the study of social institutions, while the synthetic school of thought believes that the scope of sociology should be broader and should include the study of social processes and social interactions.

Symbolic interactionism focuses on the meanings that people give to their social interactions. Structural functionalism is a macro-level theory that focuses on the ways in which society is organized and how different parts of society work together to maintain order and stability.

8. Which school of thought opined that sociology is a general science?

- a. Synthetic School
- b. Formalistic School
- c. Vienna School
- d. Scientific School

**Explanation:** The synthetic school of thought in sociology believes that sociology is a general science that studies all aspects of social life. This school of thought was founded by **Émile Durkheim**, who argued that sociology should be a science that studies the social facts, or the things that happen in society, that are beyond the control of any individual.

9. Who is associated with the development of positivism, a school of thought in sociology?

- a. Bourdieu
- b. Emile Durkheim
- c. Auguste Comte
- d. Montesquieu

10. Charles Cooley is a prominent sociologist in ..... School of Thought.

- a. Formalistic
- b. Vienna
- c. Mercantilism
- d. Chicago

11. .... is an impersonal way of control.

- a. Informal
- b. Kinship
- c. Formal
- d. Family

### INDIVIDUAL

12. The process of social interaction by which people acquire the knowledge, attitudes, values, and behavior, essential for the significant participation in society is called:

- a. Culture
- b. Defining the situation
- c. Social communication
- d. Socialization

13. The process by which an individual is made independent of the group is called:

- a. Individualization
- b. Growth
- c. Development
- d. Communication

14. Which of the following is not a characteristic of a social group?

- a. Its members are conscious of shared membership
- b. Its members accept certain rights and obligations
- c. Its members are a casual collection of people
- d. Its members have a distinctive set of interpersonal relations

15. The response of individuals to one another is:

- a. Culture
- b. Ethos
- c. Social interaction
- d. None of these

### FAMILY

16. Which of the following is NOT an essential function of a family? (AllMS Bibinagar [Tutor] 2023)

- a. Transmission of caste system to next generation
- b. Regulation of sexual reproduction
- c. Teach children to socialize
- d. Ensure economic stability

Ans.

- 1. b
- 2. b
- 3. b
- 4. c
- 5. c
- 6. b
- 7. a
- 8. a
- 9. c
- 10. d
- 11. c
- 12. d
- 13. a
- 14. c
- 15. c
- 16. a



## NURSING RESEARCH AND STATISTICS

### SYNOPSIS

#### INTRODUCTION

Nursing research provides evidence used to support nursing practices, education, administration and management.

#### DEFINITION

Nursing research is a planned attempt to increase nursing knowledge by the discovery of new facts through systematic enquiry.

#### STEPS IN THE QUANTITATIVE RESEARCH PROCESS

##### Conceptual Phase

- Formulating and delimiting the problem.
- Reviewing the literature.
- Developing a theoretical framework.
- Identifying the research variables.
- Formulating hypotheses.

##### Design and Planning Phase

- Selecting a research design.
- Specifying the population.
- Operationalizing the variables.
- Conducting the pilot study/making revisions.

##### Empirical Phase

- Selecting the sample
- Collecting the data
- Organizing data for analysis

##### Analytic Phase

- Analyzing the data
- Interpreting the results

##### Dissemination Phase

Communicating results

#### STEPS IN THE QUALITATIVE RESEARCH PROCESS

- Define/clarify the broad topic
- Review of the literature
- Identify site/setting
- Obtain access
- Obtain and test equipment
- Begin data collection and analysis
- Identify themes and categories
- Triangulation and saturation
- Formulate hypotheses/theories
- Communicate findings

#### RESEARCH PROCESS

##### Research Problem

- Research problem is the **first step** in research process.
- A research problem is a question that a researcher wants to answer or a problem that a researcher wants to solve.
- Research problem forms the foundation of any research study and guides the entire investigation.

##### Review of Literature

Review of Literature (ROL) is a systematic way of presentation of relevant references along with brief findings in the specific juncture for the proposed study or research proposal.

##### Sources of Review of Literature

- **Primary sources:** A primary source provides direct or first-hand evidence about an event, object, person or work of art. Examples include:
  - Historical and legal documents.
  - Original research articles found in Scholarly journals.
  - Published thesis.
  - Eyewitness accounts.
  - Results of experiments.
  - Statistical data.
  - Pieces of creative writing.



## KEY POINTS

- A Research Design is a framework or blueprint for conducting the research.
- Experimental research methods are useful in establishing cause and effect relationship.
- True experimental research is the most accurate form of experimental research design.
- Correlational research is a type of descriptive research.

- Meta-analysis is a consolidated and quantitative review of a large, and often complex, sometimes apparently conflicting, body of literature.
- Rigorously conducted meta-analyses are useful tools in evidence-based nursing/medicine.
- Each study is a “case” in the meta-analysis, whereas each subject is a “case” in other research designs.
- Effect Size (ES) is the “dependent variable” in the meta-analysis.
- Funnel-Plot, Fail-safe N and Egger’s test are the approaches to avoid publication bias in meta-analysis.

## META-ANALYSIS

- In 1976, **Gene Glass** coined the term ‘meta-analysis’ to refer to ‘the statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings.’

## Forest Plot

- The graphical display of results from individual studies on a common scale is a “Forest plot”.
- Each row represents an individual study.

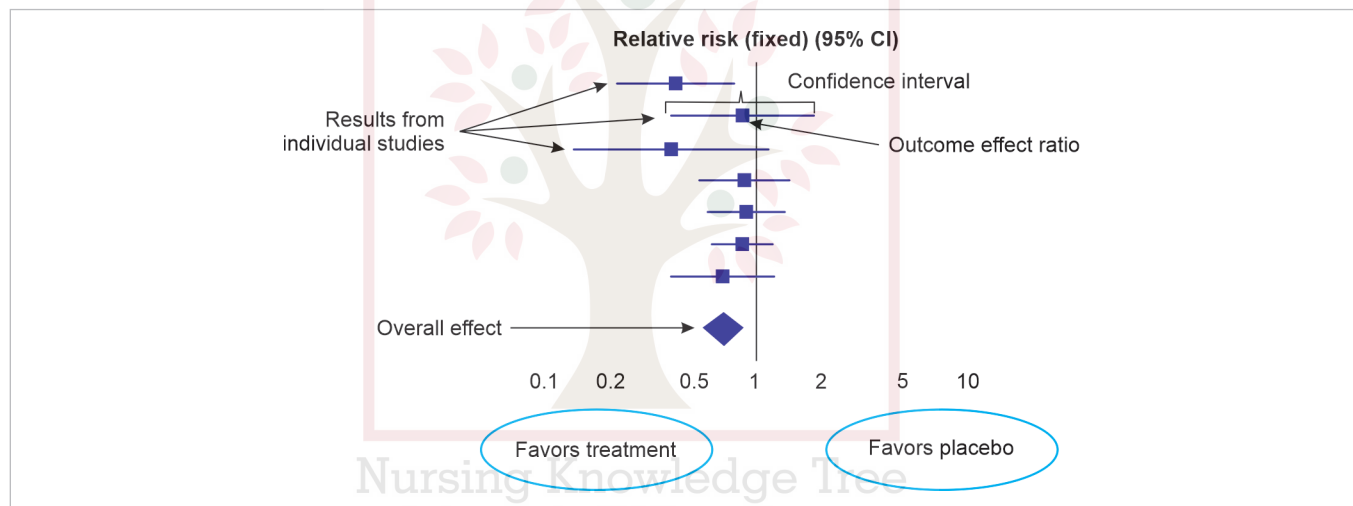


Figure 2: Forest plot diagram

## KEY POINTS

- Forest plot diagrams are used in meta-analyses and systematic reviews to visually present the results of multiple studies on a specific topic.
- In a forest plot, the “I-square” ( $I^2$ ) is a statistical measure used to assess the **heterogeneity or variability** of effect sizes among the studies included in a meta-analysis.



## Levels of Scientific Evidence

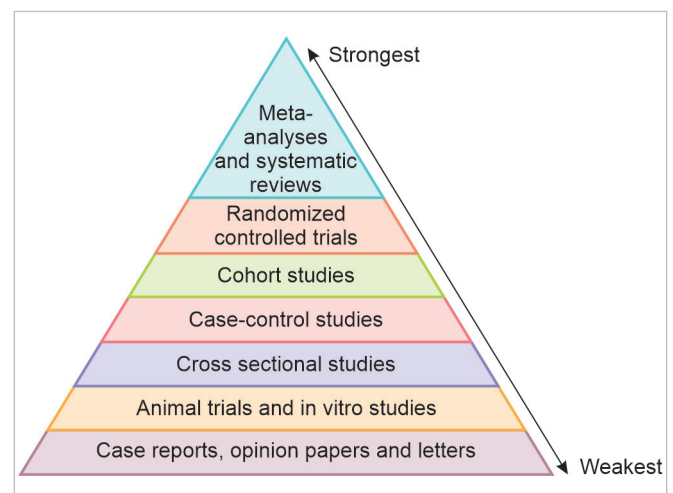


Figure 3: Hierarchy of scientific evidence



"A healthy outside starts from the inside."

— Robert Ulrich



# MULTIPLE CHOICE QUESTIONS

## (Including Explained and Practice Questions)

### INTRODUCTION & DEFINITIONS

1. **Translational research is also known as:**  
(Gujarat Nursing Service [NO/Principal] 2022)
  - a. Bench to bedside
  - b. Classroom to bedside
  - c. Evidence-based practice
  - d. Basic research
2. **Framework that explains relationship between concepts and links, concepts from various theories, research findings and experience of researcher is:**  
(Gujarat Nursing Service [NO/Principal] 2022)
  - a. Conceptual framework
  - b. Study framework
  - c. Both conceptual and study framework
  - d. Theoretical framework
3. **Which one of the following statements is not applicable to using an evidence-base in nursing practice?**  
(AIIMS Nagpur [NO] 2020)
  - a. Evidence used in nursing practice must be appraised for its validity and applicability.
  - b. To ensure the best quality of care given to patients
  - c. The use of research evidence in nursing practice does not need to be evaluated after it is used or implemented.
  - d. To ensure that nursing decisions are based on the best quality of evidence.
4. **How does audit differ from research?**  
(AIIMS Nagpur [NO] 2020)
  - a. It does not increase our understanding of the topic itself or allows us to transfer the results to other situations
  - b. It is more likely to be applicable to nursing
  - c. It can be carried out on inanimate objects
  - d. It does not need as many people to collect the information
5. **Who is the first nurse researcher?**
  - a. Martha Rogers
  - b. Dorothea Orem
  - c. Florence Nightingale
  - d. Sr. Callista Roy
6. **Contributions of Florence Nightingale to nursing research is are:**
  - a. Case study approach
  - b. Conceptual Framework for research
  - c. Data collection and analysis
  - d. Qualitative research method
7. **The first annotated index of nursing research was the work of:**
  - a. Dorothea Orem
  - b. Florence Nightingale
  - c. Denise Polit
  - d. Virginia Henderson
8. **Nursing research can be based on:**
  - a. Only nursing theories
  - b. Theories from other disciplines
  - c. Both (a) and (b)
  - d. None of the above
9. **All of the following are examples of grand theory; except:**
  - a. Interpersonal model
  - b. Community empowerment model
  - c. Health belief theory
  - d. Maslow's hierarchy of needs theory

10. **A nurse who reads research articles and incorporates research findings into clinical practice is a:**
  - a. Consumer
  - b. Primary investigator
  - c. Co-investigator
  - d. Collaborator
11. **Theories are:**
  - a. Already existing
  - b. Formulated and keep on changing
  - c. Stagnant and never change
  - d. None of the above
12. **Research paradigm is:**
  - a. Conceptual framework
  - b. Theoretical framework
  - c. Study framework
  - d. None of the above
13. **The terminology used to explain the number of subjects recruited to participate in a study who decline during the course of the project:**  
(AIIMS Raipur NO 2019)
  - a. Variability
  - b. Heterogenetic
  - c. Homogeneity
  - d. Attrition

**Explanation:** Attrition means "wearing away" or progressive loss of data in research. It occurs when cases are lost from a sample over time or over a series of sequential processes. Sample attrition is commonly expected in longitudinal studies or experimental studies.

14. **The subject in a research study behaves in a particular manner because they are aware that they are being observed. This is called:**  
(AIIMS Raipur NO 2019)
  - a. Hawthorne effect
  - b. Experimental effect
  - c. Reactive effect
  - d. Novelty effect

**Explanation:** Hawthorne effect refers to the tendency of subjects to perform better when they are aware that they are being observed.

**Experimental effect:** Researcher's characteristics influence subject behavior.

**Reactive effect:** Reactive effect of pretest sensitivity on the posttest.

**Novelty effect:** Subjects and researcher might behave in different ways when exposed to new treatment.

15. **Feasibility of a research study is determined by examining:**
  - a. Investigator's credibility
  - b. Availability of subjects
  - c. Importance of research problem
  - d. Previous research evidences
16. **A condition or characteristic that can take on different values or categories is called a:**
  - a. Constant
  - b. Variable
  - c. Cause-and-effect relationship
  - d. Descriptive relationship
17. **The theories are:**
  - a. Based on preexisting facts
  - b. Testable
  - c. Formulated prior to research
  - d. Derived from issues

Ans.

1. a
2. a
3. c
4. a
5. c
6. c
7. d
8. c
9. b
10. a
11. b
12. a
13. d
14. a
15. b
16. b
17. b



# NURSING EDUCATION/ EDUCATIONAL TECHNOLOGY

## SYNOPSIS

### EDUCATION

Education brings change in behavior of an individual in a desirable manner. It aims at all-round development of an individual.

### Philosophies of Education

The term 'Philosophy' has been derived from two words, i.e., "philos" means 'love' and "sophia" means 'wisdom'. Philosophy means love for wisdom.

### Traditional Philosophies

TABLE 1 TRADITIONAL PHILOSOPHIES				
Character	Naturalism	Idealism	Pragmatism (Experimentalism)	Realism
Exponents	<ul style="list-style-type: none"> <li>• Aristotle</li> <li>• JJ Rousseau</li> </ul>	<ul style="list-style-type: none"> <li>• Plato is father of Idealism</li> <li>• Socrates, Kant, Hegel, Guru Nanak, Tagore, Mahatma Gandhi, Dayananda and others.</li> </ul>	<ul style="list-style-type: none"> <li>• William James is the father of Pragmatism</li> <li>• John Dewey, S. Kil Patrick</li> <li>• Margaret and Mead</li> </ul>	<ul style="list-style-type: none"> <li>• J Friedrich Herbert</li> <li>• Herbert Spencer</li> <li>• Franklin Bobbitt</li> </ul>
Fundamental principles	<ul style="list-style-type: none"> <li>• Separate nature from God</li> <li>• Human life is part of nature</li> <li>• Emphasize 'matter and the physical world'</li> <li>• Ignore spirituality and supernaturalism</li> </ul>	<ul style="list-style-type: none"> <li>• Ideas or thoughts make up fundamental reality</li> <li>• Ultimate reality is spiritual rather than physical, mental or material</li> <li>• The only real things are mental entities, not physical things</li> </ul>	<ul style="list-style-type: none"> <li>• It is the product of practical experiences of life</li> <li>• Based on practical utility</li> <li>• Emphasize is on action rather than on thought</li> <li>• Experimental method of science</li> </ul>	<ul style="list-style-type: none"> <li>• Correspondence and sensation (as we see it).</li> <li>• What is true and real in daily life is admissible</li> <li>• Opposes to idealism</li> <li>• Against spiritualism</li> </ul>
Aims of Education	Self-realization, Self-expression, Self-preservation, Struggle for existence	Idealism emphasizes the glory and grandeur of human life.	Creation of new values, activity and experience, personal and social adjustment, reconstruction of experience, all-round personality development	<ul style="list-style-type: none"> <li>• Man leads a happy and comfortable life through education.</li> <li>• To develop memory of the child.</li> </ul>

Contd...



**"A healthy outside starts from the inside."**

—Robert Ulrich

# MULTIPLE CHOICE QUESTIONS

## (Including Explained and Practice Questions)



### HISTORY OF NURSING EDUCATION IN INDIA

- The importance of accreditation for higher education institution is to ensure:** (UPUMS [NO] 2023)
  - Licensure
  - Quality standards
  - Political advancement
  - Registration
- The process by which a nongovernmental or private body evaluates the quality of a higher education institution as a whole or of a specific educational programme, in order to formally recognize it as having met certain predetermined minimal criteria or standards is known as.** (UPUMS [NO] 2023)
  - Standardization
  - Licensure
  - Registration
  - Accreditation
- Which of the following statement is correct for the Nurse clinician?** (Western Coalfields Limited 2022)
  - Broad practice base
  - May function in a clinical or community setting
  - Strict regulations for practice as a Nurse Specialist
  - Must have formal academic preparation at postgraduate level in a University
- "Education is not a preparation for life; education is life itself" stated by:** (Gujarat Nursing Service [NO/Principal] 2022)
  - Mahatma Gandhi
  - Bertrand Russell
  - Helen Keller
  - John Dewey
- MPhil in Nursing program was started at RAK College of Nursing in the year:**
  - 1972
  - 1980
  - 1986
  - 1992
- PhD program in Nursing was first started in India in:**
  - 1980
  - 1985
  - 1992
  - 1996
- National Consortium for PhD in Nursing in India was initiated by:**
  - AIIMS, New Delhi
  - RAK College of Nursing, New Delhi
  - Indian Nursing Council
  - IGNOU
- In India, the first four-year basic Bachelor's Degree program in nursing was established in:**
  - 1920
  - 1940
  - 1946
  - 1955

**Explanation:** The first four-year Basic BSc program was established in 1946 at RAK College of Nursing in Delhi and CMC College of Nursing in Vellore.

### REGULATORY AND PROFESSIONAL BODIES

- According to Tamil Nadu Nurses and Midwives Council, how many credit hours is mandatory for license renewal?** (AllMS Bibinagar [Associate Professor] 2023)
  - 50 hours
  - 150 hours
  - 100 hours
  - 200 hours
- Which of the following is the function of the State Nursing Councils in India?** (UPUMS [NO] 2023)
  - To promote the development of strong national associations
  - To provide registration for foreign nurses
  - To prescribe rules of conduct, take disciplinary actions
  - To prescribe curricula for nursing education
- A registered midwife certified by INC usually provides.** (UPUMS [NO] 2023)
  - Direct patient care, and educates, consults and conducts research
  - Health care to a group of patients in an outpatient or community-based setting
  - Care to the mother during prepartum, intrapartum and postpartum periods
  - Specialized care to the victims of trauma
- Which of the following is NOT a function of the Indian Nursing Council to maintain standards in nursing education?** (UPUMS [NO] 2023)
  - Initiating, prescribing, guiding and supervising the different levels of nursing education
  - Recognizing and approving various institutions for conducting different nursing educational programs
  - Prescribing of syllabi
  - Recognizing any qualifications related to nursing, irrespective of adequacy of training
- The role of the Trained Nurses Association of India is to:** (UPUMS [NO] 2023)
  - Provide registration for foreign nurses
  - Improve the living and working conditions of nurses
  - Prescribe curricula for nursing education
  - Promote the development of strong national associations
- The function of Indian Nursing Council is to:**
  - Arrange for university inspections of colleges in respective states
  - Financial assistance to conferences and seminars conducted by nursing colleges
  - Make policies for Nursing Education and Practice
  - Recruit nursing personnel in hospitals
- Trained Nurses Association of India (TNAI) was formed in the year:**
  - 1928
  - 1947
  - 1908
  - 1890



**Ans.**

- b
- d
- a
- d
- c
- c
- c
- c
- b
- c
- d
- b
- c
- c

## PRINCIPLES OF TEACHING

62. The school of philosophy where there is a blend or synthesis of diverse philosophy is: (AIIMS Bibinagar [Tutor] 2023)

- a. Eclecticism                      b. Essentialism  
c. Progressivism                  d. Pragmatism

63. A teacher must consider the principle of individual difference in order to: (UPUMS [NO] 2023)

- a. Adopt a suitable teaching technique and standard  
b. Complete the course on time  
c. Distribute study materials  
d. Assess student performance

64. The blueprint of an educational program is: (Gujarat Nursing Service [NO/Principal] 2022)

- a. Curriculum                      b. Lesson plan  
c. Master rotation plan          d. Time table

65. Which of the following is NOT a maxim of teaching?

- a. Known to unknown            b. Complex to simple  
c. Concrete to abstract          d. Analysis to synthesis

66. Which of these is NOT a conventional philosophy?

- a. Idealism                          b. Naturalism  
c. Pragmatism                      d. Existentialism

67. Which philosophy believes that the ultimate goal of all human activities is the realization of human mind in his or herself?

- a. Idealism                          b. Pragmatism  
c. Realism                          d. Existentialism

68. Which of the following is not a principle of Lesson Planning?

- a. Flexible  
b. Mastery and adequate training on the topic  
c. Active student participation  
d. Single teaching method

69. In which type of objective, breaking down of professional functions into components (activities) is done that together indicate the nature of the functions?

- a. Central                          b. Specific  
c. Intermediate                      d. Tertiary

70. Which philosophical thought states that 'ultimate reality is spiritual rather than physical, mental rather than material'?

(Tutor Exam 2015, AIIMS, Rishikesh)

- a. Idealism                          b. Realism  
c. Pragmatism                      d. Spiritualism

71. John Dewey was a proponent of:

- a. Spiritualism                      b. Idealism  
c. Realism                          d. Pragmatism

72. Who among the following proposed that education should be designed on the basis of a theory of experience?

- a. Socrates                          b. John Dewey  
c. Aristotle                          d. Jean Piaget

73. All of the following are traditional philosophies of education; except:

- a. Idealism  
b. Pragmatism  
c. Naturalism  
d. Essentialism

74. The philosophy of education in which treatment of things is based solely on their practical utility is called\_\_\_\_\_.

- a. Realism  
b. Idealism  
c. Naturalism  
d. Pragmatism

## METHODS OF TEACHING

75. A problem-based learning is student centred learning strategy in which students collaboratively solve the problems and this reflects on their experience. One important component is: (AIIMS Jodhpur [SNO] 2023)

- a. Presentation of real-world situation or problem from ordinary life  
b. Focus the educational program  
c. Careful inspection of methods  
d. Flexible approaches to learning

76. For a successful demonstration method, the teacher: (UPUMS [NO] 2023)

- a. Need not involve students in demonstration  
b. Needs to plan all the activities in great detail and rehearse them  
c. Should proceed with the demonstration as quickly as possible after the lecture  
d. Should never break down the demonstration into a simple step-by-step pattern

77. The basic characteristic of an exhibition is: (UPUMS [NO] 2023)

- a. A play activity  
b. That it should have a central theme that focuses on a particular concept  
c. Used in higher classes  
d. That the teacher is the leader

78. In which of the following teaching methods, one teacher presents the new material to the students while the other teacher constructs a concept map on the overhead projector as the students listen to the presenting teacher?

(UPUMS [NO] 2023)

- a. Team teaching                      b. Concept map  
c. Demonstration                      d. Symposium

79. A nurse attends a ward-based education program on how to insert an intubation tube for an unconscious patient. This can be categorized as which type of education?

(UPUMS [NO] 2023)

- a. In-service education              b. Induction program  
c. Continuing education              d. Graduate education

80. A method in which several rounds of questions are given to a panel of experts is called: (AIIMS Nagpur [NO] 2020)

- a. Meta-analysis                      b. Delphi technique  
c. Q-sort methodology              d. Content analysis

81. The best method to teach a patient any skill, such as using an inhaler, is by: (AIIMS BBS NO 2018)

- a. Lecture                              b. Demonstration  
c. Discussion                              d. Panel session

**Explanation:** The best method to teach a patient any skill, is by doing and showing the things. Demonstration is the process of performing the procedure in a way a teacher expects the learners to practice.

82. Which of the following is NOT an autocratic method of teaching?

- a. Lecture                              b. Demonstration  
c. Discussion                              d. Tutorial

83. Teaching method in which students learn to do critical thinking through discussion and interaction and develop higher analytical cognitive skills is:

- a. Seminar                              b. Symposium  
c. Panel discussion                      d. Lecture

Ans.

62. a  
63. a  
64. a  
65. b  
66. d  
67. a  
68. d  
69. d  
70. a  
71. d  
72. b  
73. d  
74. d  
75. a  
76. b  
77. b  
78. a  
79. a  
80. b  
81. b  
82. c  
83. a



## NURSING ADMINISTRATION AND MANAGEMENT

### SYNOPSIS

#### ORGANIZATION

Organization is a systematic arrangement of people brought together to accomplish some specific purpose/goal.

#### ADMINISTRATION

Administration is the organization and direction of human and material resources to achieve desired goals. —Pfiffner & Presthus

#### MANAGEMENT

Management is the process of getting things done efficiently and effectively through and with other people.

#### Levels of Management

- Top Managers
- Middle Managers
- First-Line Managers

#### Theories of Management

1. Classical Management Perspective
2. Behavioral Management Perspective
3. Quantitative Management Perspective

#### Classical Management Perspective

It includes both scientific management and administrative management.

- Concerned with improving the performance of individual workers (i.e., efficiency).
- A theory that focuses on managing the organization as a whole.

#### Scientific Management

##### Frederick Taylor

- Father of scientific management

- Replaced the old rule-of-thumb method.
- Believed in selecting, training, teaching and developing workers.
- Used time study, standards planning, exception rule of management, slide-rules, instruction cards, incentives, etc.

##### Frank and Lillian Gilbreth

Reduced number of movements in bricklaying, resulting in increased output of 200%.

##### Henry Gantt

Developed other techniques, including the Gantt chart, to improve working efficiency through planning/scheduling.

#### Administrative Management

Focuses on managing the organization.

##### Henri Fayol

- Wrote General and Industrial Management.
- Helped to systematize the practice of management.
- First to describe management as planning, organizing, leading and controlling.

#### Fayol's 14 Principles of Management

- Division of labor
- Authority
- Discipline
- Unity of command
- Unity of direction
- Subordination of individuals to the common good
- Remuneration
- Centralization
- Scalar chain
- Order
- Equity
- Stability
- Initiative
- *Esprit de corps*



**"The first wealth is health."**

—Ralph Waldo Emerson



# MULTIPLE CHOICE QUESTIONS

## (Including Explained and Practice Questions)

### INTRODUCTION TO NURSING ADMINISTRATION & MANAGEMENT

1. SWOT analysis stands for the following, except:

(NORCET [June] 2023)

- a. S - strength
- b. W - weakness
- c. O - opportunities
- d. T - Time

2. A field of nursing that extends and expands the boundaries of nursing's scope of practice, contributes to nursing knowledge, and promotes the advancement of the profession is known as:

(AIIMS Bibinagar [Associate Professor] 2023)

- a. Distance learning
- b. Continuing nursing education
- c. In-service education
- d. Advanced nursing practice

3. All of the following are the advantages of a Gantt chart, except:

(AIIMS Bibinagar [Associate Professor] 2023)

- a. Helps to unsplit the activities by status of the task
- b. Helps to schedule the tasks with start date and end date
- c. Helps to understand the percentage of work or tasks remaining
- d. Helps to understand the percentage of task completion

4. What is POSDCORB in nursing management?

(AIIMS Bibinagar [Associate Professor] 2023)

- a. Planning, Organizing, Staffing, Developing, Coordinating, Recording and Bargaining
- b. Planning, Organizing, Staffing, Directing, Coordinating, Reporting and Budgeting
- c. Preparing, Orientation, Staff, Delegation, Communication, Recording and Budgeting
- d. Planning, Orientation, Staff, Delegation, Communication, Recording and Balancing

5. According to Maslow's hierarchy of human needs, the highest level is:

(SNEHP 2022)

- a. Safety and security
- b. Belongingness and affection
- c. Esteem and self-respect
- d. Self-actualization

6. Which of the following is not the principle of organization?

(RAK MSc 2018)

- a. Hierarchy
- b. Delegation
- c. Span of control
- d. Pervasiveness

**Explanation:** Pervasiveness is not the principle of the organization. There are six principles of organization given by Henri Fayol (1947)

1. Hierarchy
2. Span of control
3. Integration vs Disintegration
4. Centralization vs Decentralization
5. Unity of Command
6. Delegation

7. The level of conversation in which no sharing of oneself occurs is:

(AIIMS-BBS SNO 2019)

- a. Level 1: Open conversation
- b. Level 5: Cliché conversation
- c. Level 4: Reporting of facts
- d. Level 2: Spontaneous conversation

**Explanation:**

- **Level 5 (cliché conversation):** It is very superficial communication, where there is no communication about themselves and everyone remains safe in conversation.
- **Level 1 (Open conversation):** This happens in emotionally open and honest communication.
- **Level 2 (Spontaneous conversation):** Spontaneous thought like what is felt about situation is shared.
- **Level 3 (My ideas or judgment):** Own ideas and opinions are shared.
- **Level 4 (Reporting of facts):** Share facts and expose almost nothing about personal.

8. Which of the following functions the LEAST important for a nurse manager?

(RAK MSc 2018)

- a. Decision-making
- b. Manipulating people
- c. Monitoring subordinates
- d. Effective leading

**Explanation:** Role of nurse as a manager includes all except manipulating the people, as manipulation involves managing or influencing skillfully, especially in an unfair manner.

9. Professional negligence is legally termed as:

(AIIMS Raipur NO 2019)

- a. Crime
- b. Assault
- c. Malpractice
- d. Slander

**Explanation:**

- Malpractice is a professional liability based on negligence and includes professional misconduct, breach of duty or standard of care, illegal or immoral conduct or failure to exercise reasonable skill, all of which lead to harm.
- Crime is an offence and is punishable by law.
- An assault is the act of inflicting physical harm or unwanted physical contact upon a person.
- Slander refers to crime of making false spoken statement damaging to a person's reputation.

10. The process that enables one to access a nurse or a physician via telephone or computer is called:

(AIIMS BPL NO 2018)

- a. Telehealth
- b. E-Medicine
- c. Quality assurance
- d. Distant consultation

**Ans.**

1. d
2. d
3. a
4. b
5. d
6. d
7. b
8. b
9. c
10. a



## HEALTH/NURSING INFORMATICS AND TECHNOLOGY

### SYNOPSIS

#### KEY TERMS

- **Access:** To gain entry to data or read the data.
- **Analog:** Using signals or information represented by a continuously variable physical quantity such as spatial position, voltage, etc.
- **ASCII:** American Standard Code for Information Interchange.
- **Backup:** Saving any data or information for future.
- **BIOS:** Basic input/output system; controls input and output operations.
- **Binary:** A **binary** digit or bit, is the smallest unit of data in computing. It is represented by a 0 or a 1.
- **Bit:** The smallest unit of data in binary.
  - 8 bits = 1 byte
  - 4 bits = 1 nibble
- **Byte:** A group of binary digits or bits (usually eight) operated on a single unit. A byte is considered a unit of memory size.
  - 8 bits = 1 byte
  - 1024 Bytes = 1 kilobyte (KB)
  - 1024 KB = 1 Megabyte (MB)
  - 1024 MB = 1 Gigabyte (GB)

- 1024 GB = 1 Terabyte (TB)
- 1000 TB = 1 Petabyte

- **Cache:** It is a hardware or software component that temporarily stores data so future requests for that data can be served faster.
- **CD ROM:** From Compact Disk Read Only Memory (CD-ROM), the data can only be read but not edited, manipulated or deleted.
- **Chip:** Chip is a short form of 'microchip'. It is a small piece of semiconducting material implanted with an integrated circuit.
- **Code:** Language expressed or understood by the computer.
- **Disk Operating System (DOS):** It is a command-based operating system that runs from a hard disk drive. Most commonly refers to Microsoft Disk Operating System (MS-DOS).

#### HISTORY OF COMPUTER

- **Charles Babbage** is considered the "father of the computer". He originated the concept of a programmable computer (between 1833 and 1871).
- **Microprocessor** was invented by **Ted Hoff, Stanley Mazor and Federico Faggin** (at Intel Inc) in **1970**.
- **Microcomputer** was invented by **H. Edward Roberts** in **1975**.

#### GENERATIONS OF COMPUTER

TABLE 1 GENERATIONS OF COMPUTER			
Generation	Period	Features	Examples
First generation	1940–1955	<b>Vacuum tubes and magnetic tapes</b> <ul style="list-style-type: none"> <li>• Slow in speed</li> <li>• Very huge in size</li> <li>• Limited storage size</li> <li>• Punched cards were used to input the data.</li> <li>• Processing time for calculation was in <b>milliseconds</b></li> </ul>	ENIAC, EDVAC, UNIVAC 1
Second generation	1955–1964	<ul style="list-style-type: none"> <li>• Used <b>transistor</b> for electronic circuitry. Large in size, relatively slow and expensive</li> <li>• Needed an air-conditioned room as they got heated up very quickly</li> <li>• Processing time was in <b>microseconds</b></li> </ul>	IBM 1401, RCA 501, Honeywell 200, etc.

Contd...

10. Which of the following is NOT a potential benefit of using AI in high fidelity simulation learning in nursing?

- AI can be used to create more realistic and immersive simulations.
- AI can be used to replace human instructors.
- AI can be used to track learner progress and identify areas for improvement.
- AI can be used to provide feedback to learners in real time.

**Explanation:** AI can be used to supplement human instructors, but it is not yet possible for AI to fully replace human instructors. Human instructors are still needed

### BASIC KEY TERMS

11. Clinical information, such as order sets and patient education material, should be reviewed at least:

(AIIMS Nagpur [NO] 2020)

- Annually
- Monthly
- Biannually
- Biennially

12. When designing a web page that should appeal to both males and females, a good choice of background color is:

(AIIMS Nagpur [NO] 2020)

- Orange
- Blue
- Brown
- Grey

13. In respect to patient data in database, the most important factor is:

(AIIMS Nagpur [NO] 2020)

- Transferability
- Accessibility
- Security
- Relevance

14. How many different unique codes can be generated using 5-bits?

(AIIMS Nagpur [NO] 2020)

- 64
- 32
- 8
- 16

15. How many nibbles are in 128 bytes?

(AIIMS Nagpur [NO] 2020)

- 64
- 1024
- 512
- 256

16. Which one of the following competencies is not included as expected outcome after teaching the subject nursing informatics?

(AIIMS Raipur NO 2019)

- Basic computer skills
- Information literacy
- Basic informatics competencies
- Advanced informatics competencies

**Explanation:** Advanced nursing informatics competencies are not included as expected outcome or the objective of the subject nursing informatics as only a basic knowledge in computer skills, information literacy and informatics is required to provide technology-based services to the patient.

17. If a computer provides database services to others, then it will be known as:

(AIIMS Raipur NO 2019)

- Web server
- Application server
- Database server
- FTP server

**Explanation:** A database server has an application that helps to provide database services to other computers. **Web server** provides web pages. **Application server** serves dual purpose, it can create web applications as well as provide them the servers to run. **FTP server** helps in transferring of data among different computers present in a network.

18. A computer must have:

(AIIMS Raipur NO 2019)

- Microsoft Office
- Operating System
- Internet connectivity
- An antivirus

**Explanation:** A computer must have an operating system to run. Operating system is called the manager of the computer system resources. Operating system acts as a liaison between the computer and the humans. Some of the common disk operating systems are: Windows, Disk Operating System (DOS), Unix or Xenix and Linux.

Microsoft Office and antivirus are applications that are not mandatory to run a computer. Internet connectivity is not mandatory to operate a computer.

19. The \_\_\_\_\_ manages and coordinates the functions of the entire computer system.

(AIIMS BPL NO 2018)

- Control unit (CU)
- Arithmetic logic unit (ALU)
- Hard disk drive
- Registers

**Explanation:** Control unit (CU) coordinates the functions of computer system. The information stored in the memory unit (e.g., hard disk drive) is extracted, decoded and executed by the **control unit**. Control unit demands help from ALU whenever required. CPU contains **registers** where processing of arithmetic operations of data occurs.

20. What is computer booting?

(AIIMS BPL NO 2018)

- Loading operating system into memory to make the computer system ready to use
- Defragmenting the hard disk drive
- Deleting the operating system
- Formatting the hard disk drive

**Explanation:** The startup process of computer system is termed "Bootting". In this, the computer system checks whether all the devices are connected properly or not. This is done by a small program in ROM.

21. \_\_\_\_\_ use diagnostic routines to test system for equipment failure.

(AIIMS Nagpur NO 2018)

- Managing task
- Managing files
- Bootting
- Formatting

**Explanation:** **Bootting** uses diagnostic routines to test the system for equipment failure. The startup process of computer system is termed "Bootting". This happens before an operating system comes into action.

22. Using \_\_\_\_\_ button, you can move around the worksheet.

(AIIMS Nagpur NO 2018)

- Start
- Scroll
- Formatting
- All of these

23. Clinical and technological advancements in nursing by application of computer and information science is called:

(AIIMS Nagpur NO 2018)

- Nursing informatics
- Nursing diagnosis
- Nursing procedure
- Nursing reference

**Explanation:** **Nursing informatics** is called the clinical and technological advancements in nursing by application of computer and information science. Nursing informatics is amalgamation of nursing science, computer science and information science.

**Nursing diagnosis, procedures and references** are not technology based concepts hence they are incorrect.

Ans.

- b
- a
- d
- c
- b
- d
- d
- c
- b
- a
- a
- c
- b
- a





# FORENSIC NURSING AND INDIAN LAWS

## SYNOPSIS

### INTRODUCTION

- Forensic nurses provide comprehensive care to individuals who have experienced violence, trauma or who are involved in legal proceedings.
- Forensic nurses work in various settings such as hospitals, clinics, correctional facilities, and forensic laboratories.
- Forensic nursing requires a unique set of skills, combining medical knowledge, evidence collection, and legal understanding.

### IMPORTANCE

- To collect and preserve evidence related to crimes, accidents or abuse cases.
- To gather physical evidence, document injuries, and provide detailed reports for legal purposes. This can involve photographing injuries, collecting DNA samples, and maintaining chain of custody for evidence.
- To provide compassionate care to victims of violence or trauma, including sexual assault, domestic violence, child abuse, and elder abuse.
- To prepare thorough assessments, provide medical treatment, offer emotional support, and connect patients with appropriate resources for counseling and follow-up care.
- To collaborate with multidisciplinary teams, including law enforcement personnel, social workers, psychologists, and legal professionals.

### AREAS OF FORENSIC NURSING PRACTICE

- Intimate partner violence
- Child abuse or maltreatment
- Elder abuse
- Sexual assault
- Death investigation
- Correctional nursing

### SCOPE AND PRACTICE OF FORENSIC NURSING

- Forensic evidence collection
- Sexual assault nurse examiner
- Documentation and reporting of findings and observations
- Injury assessment and documentation
- Expert witness testimony
- Collaborative role
- Community education and advocacy

### MILESTONES IN FORENSIC NURSING

- **1982:** The International Association of Forensic Nurses (IAFN) was established.
- **1995:** The American Nurses Association recognized forensic nursing as a nursing specialty.
- **2021:** Indian Nursing Council introduced forensic nursing as a subject in the graduate nursing program.

### SUBSPECIALTIES IN FORENSIC NURSING

**TABLE 1** SUBSPECIALTIES AND THEIR DESCRIPTIONS

Subspecialty	Descriptions
Sexual assault nurse examiners (SANEs)	<ul style="list-style-type: none"> <li>• Providing comprehensive care to individuals who have experienced sexual assault or rape.</li> <li>• They are trained in forensic evidence collection, conducting sensitive interviews, and providing medical and psychological support to survivors.</li> </ul>
Forensic psychiatric nurses	<ul style="list-style-type: none"> <li>• Work with individuals involved in the legal system who have mental health issues.</li> <li>• They assess and treat mental health conditions, provide counseling, and therapy, and assist in determining the mental competency of individuals involved in legal proceedings.</li> </ul>

Contd...

Subspecialty	Descriptions
Forensic nurse death investigators	<ul style="list-style-type: none"> <li>Nurses work closely with medical examiners or coroners to investigate deaths that are suspicious, violent or unexpected.</li> <li>They assist in the collection of evidence, document injuries, and provide expert input on the medical aspects of death investigations.</li> </ul>
Forensic nurse consultants	<ul style="list-style-type: none"> <li>Provide expert advice and consultation on forensic nursing matters.</li> <li>They may assist with legal cases, review medical records, provide expert testimony, and offer guidance on policies and protocols related to forensic nursing practice.</li> </ul>
Forensic nurse educators	They are responsible for teaching and training aspiring forensic nurses. They develop and deliver educational programs, design curriculum, and provide guidance on forensic nursing practice.
Forensic nurses in correctional settings	<ul style="list-style-type: none"> <li>Nurses work within prisons, providing healthcare services to individuals who are incarcerated.</li> <li>They assess and treat injuries, conduct health screenings, address mental health concerns, and provide support for inmates within the criminal justice system.</li> </ul>
Legal nurse consultants	<ul style="list-style-type: none"> <li>They bridge the gap between healthcare and the legal system.</li> <li>They provide expertise and analysis on medical-legal cases, review medical records, assist with case preparation, and offer guidance on healthcare standards and regulations within legal contexts.</li> </ul>

## ETHICAL ISSUES IN FORENSIC NURSING

**TABLE 2** ETHICAL ISSUES AND THEIR DESCRIPTIONS

Ethical issues	Descriptions
Confidentiality and privacy	<ul style="list-style-type: none"> <li>Forensic nurses often work with sensitive and confidential information related to victims, perpetrators, and legal cases.</li> <li>They must maintain strict confidentiality and privacy while balancing the need to share pertinent information with law enforcement and legal authorities to ensure public safety and facilitate justice.</li> </ul>
Informed consent	<ul style="list-style-type: none"> <li>Obtaining informed consent can be challenging in forensic nursing, especially in cases involving victims of violence or trauma.</li> <li>Forensic nurses must ensure individuals fully understand the purposes, risks, and benefits of any procedures or interventions, while taking into account their emotional and psychological state.</li> </ul>
Autonomy and decision-making	<ul style="list-style-type: none"> <li>Forensic nurses may encounter situations where individuals' autonomy and decision-making capacity may be compromised due to trauma, mental health issues or other factors.</li> <li>Balancing respect for autonomy with the duty to protect vulnerable individuals can be ethically complex.</li> </ul>
Dual roles and conflicts of interest	Forensic nurses may face situations where they have dual roles or conflicting responsibilities. For example, they may be both a healthcare provider and a forensic expert witness. Managing conflicts of interest while maintaining objectivity and integrity is essential.
Cultural sensitivity and diversity	<ul style="list-style-type: none"> <li>Forensic nurses work with diverse populations, and cultural sensitivity is crucial in providing equitable care.</li> <li>Respecting cultural beliefs, practices, and norms while ensuring the safety and well-being of individuals can present ethical challenges.</li> </ul>
Professional boundaries	<ul style="list-style-type: none"> <li>The nature of the work which may involve intimate examinations, sensitive conversations, and emotional support.</li> <li>Forensic nurses must establish and maintain professional boundaries to ensure ethical practice and prevent any exploitation or misconduct.</li> </ul>
Justice and fairness	<ul style="list-style-type: none"> <li>Forensic nursing is inherently connected to the pursuit of justice.</li> <li>Ensuring fairness, impartiality, and upholding the principles of justice are of paramount importance.</li> </ul>
Duty to report	Forensic nurses have a legal and ethical duty to report certain incidents, such as child abuse or certain types of violence. However, dilemmas can arise when considering the potential consequences and impact of reporting, particularly in cases where the victim may be at risk or reluctant to involve the legal system.



**"An apple a day keeps the doctor away."**

—Benjamin Franklin



# MULTIPLE CHOICE QUESTIONS

## (Including Explained and Practice Questions)

### INTRODUCTION TO FORENSIC NURSING

1. The initial role of the field forensic epidemiology was investigation related to: (AIIMS Bibinagar [Tutor] 2023)
  - a. Medical misadventures
  - b. Bioterrorism
  - c. Industrial accidents
  - d. Drug prevention
2. Wrongful killing of a human being without justification or excuse is: (Gujarat Nursing Service NO/Principal 2022)
  - a. Noncriminal homicide
  - b. First degree murder
  - c. Excusable homicide
  - d. Felonious homicide
3. The Indian Nursing Council introduced forensic nursing as a subject in the graduate nursing program in the year:
  - a. 2016
  - b. 2018
  - c. 2021
  - d. 2023
4. The International Association of Forensic Nurses (IAFN) was established in the year:
  - a. 1965
  - b. 1992
  - c. 1995
  - d. 2001
5. Which of the following statements regarding the responsibilities of a forensic nurse is incorrect?
  - a. "The forensic nurse only cares for dead patients."
  - b. "The forensic nurse provides expert testimony at court trial."
  - c. "Forensic nurse provides compassionate care to victims of violence or trauma"
  - d. "Forensic nurse gathers physical evidence, documents injuries, and provides detailed reports for legal purposes."

### ETHICAL ISSUES IN FORENSIC NURSING

6. In forensic nursing, what ethical issue arises while balancing the need to maintain confidentiality and privacy with the obligation to share relevant information with law enforcement and legal authorities?
  - a. Informed Consent
  - b. Dual Roles and Conflicts of Interest
  - c. Confidentiality and Privacy
  - d. Cultural Sensitivity and Diversity
7. When providing care, what ethical challenge may arise in respecting beliefs and practices while ensuring the safety and well-being of individuals?
  - a. Safety and privacy
  - b. Duty to report
  - c. Cultural sensitivity and diversity
  - d. Autonomy and decision-making

### FORENSIC TEAM

8. Which member of the forensic team is responsible for conducting autopsies and determining the cause and manner of death in cases of suspicious or violent deaths?
  - a. Medical Examiners/Forensic Pathologists
  - b. Forensic Nurses
  - c. Forensic scientists
  - d. Psychologists/Psychiatrists
9. Which of the following forensic team members are primarily responsible for crisis intervention, safety planning and connecting individuals with appropriate community services?
  - a. Medical examiners
  - b. Victim advocates
  - c. Forensic nurses
  - d. Social workers/Counselors
10. Which subspecialty of forensic nursing involves working closely with medical examiners or coroners to investigate suspicious, violent or unexpected deaths?
  - a. Legal Nurse Consultant
  - b. Forensic Psychiatric Nurse
  - c. Forensic Nurse Death Investigator
  - d. Forensic Nurse Consultant
11. Which forensic nurse is responsible for conducting screening of sexual predators?
  - a. Legal nurse consultant
  - b. Forensic psychiatric nurse
  - c. Sexual assault nurse examiner
  - d. Forensic Nurse Death Investigator

**Explanation:** The role of the forensic psychiatric nurse involves conducting sexual predator screening. Sexual assault nurse examiners are responsible for gathering evidence from victim of sexual abuse. Legal nurse consultants are involved in investigating care delivery outcomes. Forensic nurse death investigator works closely with medical examiners or coroners to investigate suspicious, violent, or unexpected deaths.

12. The responsibilities of the legal nurse consultant (LNC) include all; except:
  - a. Representing patients in a court of law
  - b. Creating timelines of health care events
  - c. Organizing and analyzing medical records
  - d. Identifying standards of care are met or breached
13. While testifying in court proceedings, the legal nurse consultant (LNC) should do all; except:
  - a. Respond confidently
  - b. Avoid getting angry
  - c. Answer questions quickly
  - d. Refrain from saying "I believe"

**Ans.**

1. b
2. d
3. c
4. b
5. a
6. c
7. c
8. a
9. d
10. c
11. b
12. a
13. c



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9. AIIMS Jodhpur (SNO) 2023
10. AllMS Bibinagar (Tutor) 2023
11. AllMS Bibinagar (Associate Professor) 2023
12. NORCET 4 (2023)
13. NORCET 3 (2022)
14. NORCET 2 (2021)
15. AIIMS (NORCET 1)/2020
16. AIIMS Raipur (Lecturer) 2021
17. AIIMS Jodhpur (NO) 2020
18. AIIMS Nagpur (NO) 2020
19. AIIMS Patna (NO) 2020
20. AIIMS Raipur (NO) 2019
21. AIIMS Bhatinda (NO) 2019
22. AIIMS Raipur (NO) 2019; Shift 1
23. AIIMS Raipur (NO) 2019; Shift 2
24. AIIMS Raipur (NO) 2019; Shift 3
25. AIIMS Bhubaneswar (SNO) 2019
26. AIIMS New Delhi (NO) 2019
27. AIIMS New Delhi (NO) 2018
28. AIIMS Nagpur (NO) 2018

29. AIIMS Jodhpur (SNO) 2018
30. AIIMS Bhopal (SNO) 2018
31. AIIMS Bhopal (NO) 2018; Shift 1
32. AIIMS Bhopal (NO) 2018; Shift 2
33. AIIMS Mangalagiri (NO) Grade-II; 2018; Shift 2
34. AIIMS Bhubaneswar (NO) 2018
35. AIIMS Raipur (NO) 2017; Shift 1
36. AIIMS Raipur (NO) 2017; Shift 2
37. AIIMS Raipur (NO) 2017; Shift 3
38. AIIMS Raipur (Nursing Tutor) 2017
39. AIIMS Jodhpur & Rishikesh (NO) 2017
40. AIIMS Raipur (SNO) 2017
41. AIIMS Bhopal (NO) 2016
42. AIIMS New Delhi (NO) 2016
43. AIIMS Bhopal (SNO) 2016

#### Employees' State Insurance Corporation

44. ESIC Paramedical 2019; Shift 1
45. ESIC Paramedical 2019; Shift 2
46. ESIC (NO) 2016; Shift 1
47. ESIC (NO) 2016; Shift 2
48. ESIC Bangalore (NO) 2016; Shift 1
49. ESIC Bangalore (NO) 2016; Shift 2
50. ESIC Delhi (NO) 2016
51. ESIC Bangalore (NO) 2013
52. ESIC Chennai (NO) 2012
53. ESIC (NO) 2011; Grade II
54. ESIC Ahmedabad (NO) 2011

#### Banaras Hindu University

55. BHU (NO) 2019
56. BHU (NO) 2018
57. BHU (NO) 2016
58. BHU (NO) 2015

#### Safdarjung Nursing Officer

59. Safdarjung (NO) 2019
60. Safdarjung (NO) 2018

#### Jawaharlal Institute of Postgraduate Medical Education & Research

61. JIPMER (NO) 2020
62. JIPMER (NO) 2013
63. JIPMER (NO) 2012

#### Railway Recruitment Board

64. RRB (NO) 2019; Shift 1
65. RRB (NO) 2019; Shift 2
66. RRB (NO) 2019; Shift 3
67. RRB (NO) 2019; Shift 4
68. RRB (NO) 2019; Shift 5
69. RRB Paramedical PHN 2015
70. RRB (NO) 2015 (Set A)
71. RRB (NO) 2015 (Set B)
72. RRB (NO) 2015 (Set C)
73. RRB Secunderabad (SNO) 2015
74. RRB (NO) 2012

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**Rajkumari Amrit Kaur  
College of Nursing**

75. RAK MSc Entrance Exam 2018
76. RAK MSc Entrance Exam 2017

**Govt. Medical College & Hospital,  
Chandigarh**

77. GMCH (NO) 2019
78. GMCH (NO) 2016

**Delhi Subordinate Services  
Selection Board**

79. DSSSB 2024 Shift 2
80. DSSSB 2024 Shift 3
81. DSSSB 2019 Shift 1
82. DSSSB 2019 Shift 2
83. DSSSB PHN 2015
84. DSSSB ANM 2015

**Kerala PSC**

85. Kerala PSC (NO) 2021
86. Kerala PSC (NO) 2017
87. Kerala PSC (NO) 2016
88. Kerala PSC (NO) 2014
89. Kerala PSC (NO) 2011; Grade II
90. Kerala PSC (NO) 2011; Set C
91. Kerala PSC (NO) 2010

**Rajasthan University of Health  
Sciences**

92. RUHS MSc Nursing Entrance Exam 2018
93. RUHS MSc Nursing Entrance Exam 2016
94. RUHS Post Basic BSc Nursing Entrance Exam 2016

**Community Health Officer**

95. CHO Haryana 2021
96. CHO Rajasthan 2020
97. CHO Madhya Pradesh 2020
98. CHO Madhya Pradesh 2019 Shift 1
99. CHO Uttar Pradesh 2018

**Miscellaneous Institutions**

100. Sanjay Gandhi Postgraduate Institute of Medical Sciences (NO) 2024 Shift 1
101. Uttar Pradesh University of Medical Sciences (NO) 2023 Shift 1
102. Uttar Pradesh University of Medical Sciences (NO) 2023 Shift 2
103. Sree Chitra Tirunal Institute for Medical Science and Technology (NO) 2023
104. Odisha Subordinate Staff Selection Commission (NO) 2022
105. Gujarat Nursing Service (Nursing Officer/Principal) 2022
106. Western Coalfields Limited 2022
107. Staff Nurse Examination Himachal Pradesh 2022
108. Gujarat Nursing Service (NO) 2021

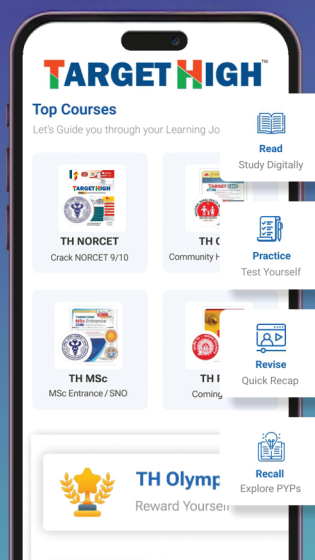
109. Chittaranjan National Cancer Institute (NO) 2021
110. Uttarakhand (Assistant Professor) 2021
111. Rohtak (NO) 2020
112. Sher-e-Kashmir University (NO) 2020
113. Jr Grade Nurse/Jr Staff Nurse 2020
114. Northern Coal Field Limited, Singrauli (NO) 2019
115. NIMHANS (NO) 2019
116. Daman and Diu (NO) 2018
117. Uttarakhand MSc 2016
118. HPSSC (NO) 2016
119. Himachal Pradesh (NO) 2016
120. PGIMER Chandigarh (NO) 2016
121. Sree Chitra Tirunal Institute for Medical Sciences & Technology (NO) 2015
122. TNPSC Maternal and Child Health Officer 2015
123. LNJP Hospital Delhi (NO) 2012
124. Jhalawar Hospital and Medical College Society 2012
125. Regional Cancer Center (NO) 2012
126. Ram Manohar Lohia Hospital (NO) 2011
127. Insurance Medical Services (NO) 2004

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SECTION

C

## GENERAL KNOWLEDGE AND APTITUDE

### SUBJECTS COVERED

- General Knowledge
- General English and Comprehension
- General Intelligence and Reasoning Ability
- Arithmetical and Numerical Ability

Nursing Knowledge Tree  
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# GENERAL KNOWLEDGE

## FIRST IN INDIA (MALE)

First Governor of Bengal	Lord Clive
First Governor General of Bengal	Warren Hastings
First Governor General of India	Lord William Bentinck
First Viceroy of India	Lord Canning
First President of Indian National Congress	W C Banerjee
First Muslim President of Indian National Congress	Badruddin Tayab Ji
First Governor General of Independent India	Louis Mountbatten
First Indian Governor General of Independent India	C Rajagopalachari
First Indian to pass ICS Exam	Satyendranath Tagore
First Indian Aeronaut (to go into space)	Sqn. Ldr. Rakesh Sharma
First Indian Judge of International Court of Justice	Dr Nagendra Nath
First Indian to get Bharat Ratna Award	C Rajagopalachari, Sarvepalli Radhakrishnan and C V Raman
First Indian to swim across the English Channel	Mihir Sen
First Muslim President of India	Dr Zakir Hussain
First Speaker of Lok Sabha	G V Mavlankar
First President of Independent India	Dr Rajendra Prasad
First Vice-President of Independent India	Dr S Radhakrishnan
First Prime Minister of Independent India	Pt. Jawahar Lal Nehru

Contd...

First Education Minister of Independent India	Maulana Abul Kalam Azad
First person to get Paramvir Chakra	Major Somnath Sharma
First Indian Scientist to get Nobel Prize	C V Raman
First Chinese pilgrim to visit India	Fa-Hien
First Minister to resign from Indian Union Cabinet	Shyama Prasad Mukherjee
First British to visit India	John Mildenhall
First Chief Justice of India	Hiralal J Kania

## FIRST IN INDIA (FEMALE)

First Woman President of India	Pratibha Devi Singh Patil
First Woman Prime Minister of India	Indira Gandhi
First Woman Governor of an Indian State	Sarojini Naidu
First Woman Ruler of Delhi Throne	Razia Sultan
First Woman IPS Officer	Kiran Bedi
First Woman Chief Minister of an Indian State	Sucheta Kripalani (UP)
First Woman Union Minister	Rajkumari Amrit Kaur
First Woman President of Indian National Congress	Annie Besant
First Woman Judge of Supreme Court	Meera Sahib Fatima Bibi
First Woman to receive Ashoka Chakra	Neerja Bhanot

Contd...



# 2

## GENERAL ENGLISH AND COMPREHENSION

### This Chapter Contains:

- Parts of Speech
- Articles
- Tenses
- Jumbled Words
- Antonyms
- Synonyms
- Idioms and Phrases

### PARTS OF SPEECH

The Parts of Speech play a crucial role in English grammar and composition. They clarify the function and meaning along with their grammatical use in a sentence. A single word can be used as more than one part of speech in different circumstances. Understanding parts of speech is essential for determining the correct definition of a word.

#### Noun

A noun refers to the name of a person, place, thing or object. Basically, anything that names a “thing” is a noun, whether you’re talking about a basketball court, San Francisco, Cleopatra or self-preservation.

Nouns are of various types: Common noun, proper noun, abstract noun and concrete noun; a noun could be countable or uncountable.

#### Pronoun

Pronouns are the substitutes for specific nouns when a reader or listener already knows which specific noun you are referring to.

You might say, “Jenny was supposed to be here at eight,” then follow it with “She’s always late; next time I’ll tell her to be here half an hour earlier.”

Instead of saying Jenny’s name three times in a row, you substituted *she* and *her*, and your sentences remained grammatically correct.

#### Adjective

Adjectives are words that describe nouns. Think about your favorite movie. How would you describe it to a friend who’s never seen it?

You might say the movie was funny, engaging, well-written, or suspenseful. When you’re describing the movie with these words, you’re using adjectives. An adjective can go right before the noun it is describing (“I have a black dog”), or sometimes, at the end of a sentence (“My dog is black”).

#### Verb

**Go! Be amazing! Run** as fast as you can! **Win** the race! **Congratulate** every participant who **put** in the work and **competed**!

Those bold words are verbs. Verbs are words that describe specific actions, like **running**, **winning**, and **being** amazing.

Not all verbs refer to literal actions, though. Verbs that refer to feelings or states of being, like **to love** and **to be**, are known as **nonaction verbs**. Conversely, the verbs that do refer to literal actions are known as **action verbs**.

#### Adverb

An adverb is a word that describes an adjective, a verb, or another adverb.

I entered the room quietly.

*Quietly* is describing how you entered (verb) the room.

*A cheetah is always faster than a lion.*

*Always* is describing how frequently a cheetah is faster (adjective) than a lion.

#### Preposition

Prepositions tell you the relationship with other words in a sentence.

You might say, “I left my bike leaning **against** the garage.” In this sentence, **against** is the preposition because it tells us where you left your bike.



## GENERAL INTELLIGENCE AND REASONING ABILITY

### CODING-DECODING

Alphabet test-based questions are generally asked which require an understanding of positions of alphabets in the series.

Forward number	Alphabet	Forward number	Alphabet
1	A	14	N
2	B	15	O
3	C	16	P
4	D	17	Q
5	E	18	R
6	F	19	S
7	G	20	T
8	H	21	U
9	I	22	V
10	J	23	W
11	K	24	X
12	L	25	Y
13	M	26	Z

4. In a certain code language, "You are good." is written as "la ba ma" and "I am bad." is written as "ca sa pa". What will be the code for "Am I good?" in the same language?

a. sa ca ma                      b. sa la ma  
c. sa ca ba                      d. sa pa ca

5. In a certain code, "APPLE" is written as "ZOOKD". What will be the code for "BANANA" in the same language?

a. AAMZMZ                      b. AZMZNZ  
c. AZMZBZ                      d. AZMZMZ

6. How many letters are there between 8th letter from left and 7th letter from right in the alphabet series?

a. 11                                b. 7  
c. 8                                d. 10

7. In a certain code, "FILE" is written as 7465 and "IDEAL" is written as 43586. How will "DEAF" be written in that code language?

a. 3587                            b. 3467  
c. 3764                            d. 3827

### ANALOGY

Analogy means similarity, i.e., a particular relationship between words/letters/numbers will be given and another similar relationship we have to find from the options.

### PRACTICE EXERCISES

- What will come in the place of "?" in the following question?  
BCD: DEF :: LMN: ? (Western Coalfields Limited 2022)  
a. PQO                            b. NOP  
c. QPO                            d. PON
- Complete the second pair in which both the elements bear the same relationship as in the first pair. FILM: 10 :: HOTEL: ? (Western Coalfields Limited 2022)  
a. 14                                b. 16  
c. 12                                d. 20
- In a certain code language, "BOY" is written as "21225". What will be the code for "GIRL" in the same language?  
a. 791218                        b. 792181  
c. 791812                        d. 791281

### PRACTICE EXERCISES

- "Cock" is related to "Hen" in the same way as "Peacock" is related to:  
a. Peahen                        b. Parrot  
c. Pigeon                        d. Bird
- Brick: Wall: House  
a. Eyes: Lashes: See                      b. Water: River: Sea  
c. Hands: Legs: Body                      d. Cell: Tissue: Organ
- 12 : 144 :: 17 :  
a. 199                              b. 289  
c. 241                              d. 179



4. **ASTN : ZTSO :: MSUB :**

- a. ALCY                      b. LTTC  
c. LRRC                      d. LTTA

5. **BOY : 6 :: HONEY :**

- a. 8                              b. 6  
c. 4                              d. 7

## NUMBER SYSTEM

Number series is a sequential arrangement of numbers in which numbers follow a certain pattern. This pattern can be based on:

- i. **Addition/Subtraction of numbers:** If the number series is increasing slowly, then it will be addition series otherwise if the numbers are decreasing slowly, then that will be a subtraction series.

### PRACTICE EXERCISES

1. **Complete the sequence.**

1 2 3 5 8 13.....

- a. 20                              b. 21  
c. 15                              d. 23

2. **Which number should come next? 46, 44, 40, 38, 34,**

(Western Coalfields Limited 2022)

- a. 30                              b. 32  
c. 33                              d. 36

3. **Study the below series and identify which number can come in place of “?”**

(AIIMS Nagpur [NO] 2020)

4, 5, 7, 9, 13, 15, 19, 21, 25, ?, 33, 39

- a. 31                              b. 29  
c. 27                              d. 33

4. **If 4 is related to 64 and 5 is related to 100 in the same way 7 is related to \_\_\_\_\_.**

(AIIMS Nagpur [NO] 2020)

- a. 196                              b. 49  
c. 98                              d. 169

5. **2, 1,  $\frac{1}{2}$ ,  $\frac{1}{4}$ , ..... which number is next in the series?**

(JIPMER [NO] 2020)

- a.  $\frac{1}{6}$                               b.  $\frac{1}{8}$   
c.  $\frac{1}{12}$                               d.  $\frac{1}{16}$

6. **4, 7, 12, 19, 28, ..... which number is next in the series?**

(JIPMER [NO] 2020)

- a. 37                              b. 39  
c. 41                              d. 43

7. **Find the next number in the given series: 7, 12, 19, 28, 39, ...**

- a. 51                              b. 52  
c. 53                              d. 54

8. **Find the next number in the given series: 40, 30, 22, 16, .....**

- a. 12                              b. 16  
c. 14                              d. 50

- ii. **Multiplication/Division of numbers:** If the number series is increasing rapidly, then it will be multiplication series otherwise if the numbers are decreasing rapidly, then that will be a division series.

9. **Find the next number in the given series: 20, 100, 600, 4200, 33600, .....**

- a. 302300                      b. 302400  
c. 302600                      d. 302700

10. **Find the missing number in the given series: 648, 216, 108, 36, ....., 6.**

- a. 16                              b. 24  
c. 18                              d. 12

- iii. **Addition/Subtraction of Squares/Cubes of numbers:** At times, the series is based on addition or subtraction of squares or cubes of a definite pattern.

11. **Find the next number in the given series: 212, 208, 199, 183, .....**

- a. 158                              b. 153  
c. 143                              d. 130

12. **Find the next number in the given series: 8, 27, 64, 125, .....**

- a. 224                              b. 326  
c. 260                              d. 216

## BLOOD RELATIONS

Blood relations are the relations between two or more persons. It can be maternal relations (mother's side) or paternal relations (father's side).

**Trick:** To solve such questions easily, you should make a diagram by adding various symbols.

Sl. No.	Individual/Relation	Symbol
1.	Man	+
2.	Woman	-
3.	Husband-Wife	+ < > -
4.	Brother-Sister	+ -
5.	Brother-Brother	+ +
6.	Sister-Sister	- -

### PRACTICE EXERCISES

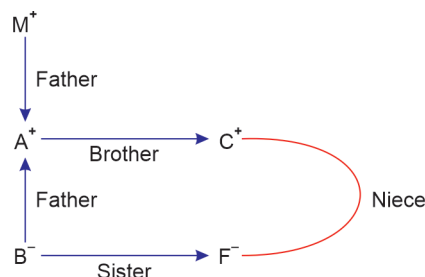
1. **If P is the brother of Q, Q is the sister of R, and R is the father of S. How S is related to P?**

(Western Coalfields Limited 2022)

- a. Brother                      b. Sister  
c. Nephew                      d. Cannot be determined

2. **Example: A is the father of B, C is the brother of A, F is the sister of B. If M is the father of A, then establish relationship between F and C.**

- a. Husband and Wife  
b. Daughter and Father  
c. Grandmother and Granddaughter  
d. Niece and Uncle





## ARITHMETICAL AND NUMERICAL ABILITY

### NUMBER SYSTEM

1. **Natural numbers:** Numbers from 1 to infinity are known as natural numbers.
2. **Whole numbers:** Natural numbers including zero (0) are known as whole numbers.
3. **Integers:** Integers are a set of numbers that include zero, positive numbers, and negative numbers. Examples of Integers: -1, -12, 6, 15.
  - **Positive Integers:** They include all the positive numbers. For example: 1, 2, 3, 4, 5, 6....., etc.
  - **Negative Integers:** They include all the negative numbers. For example: -1, -2, -3, -4, -5, -6....., etc.
4. **Rational numbers:** A number which we can write in p/q form, where p is an integer and q is not equal to zero is known as a rational number. For example: 4/5, 6/7, 1/5, etc.
5. **Irrational numbers:** The numbers which cannot be expressed in p/q form are known as irrational numbers. Also, the decimal expressions of these numbers are nonterminating and nonrepeating. For example:  $\sqrt{2}$ ,  $\sqrt{3}$ ,  $\sqrt{5}$ ....etc.
6. **Real numbers:** The combination of rational and irrational numbers is known as real numbers. For example: 11/23, etc.
7. **Prime numbers:** The number which is divisible by only 1 or by itself is known as prime number. For example: 2, 3, 5, 7, etc.
8. **Composite numbers:** Numbers that have more than two factors are known as composite numbers. For example: 4, 6, 8, etc.
9. **Co-prime numbers:** Numbers having only one common factor are called co-prime numbers. For example: (3,7) (8,9), etc.

### LCM AND HCF

**Least Common Multiple (LCM):** The least number which is exactly divisible by two or more numbers is known as LCM.

#### Example:

If we consider the multiples of 16 and 20, we get;  
 Multiples of 16 are 16, 32, 48, 64, **80**,...  
 Multiples of 20 are 20, 40, 60, **80**,...  
 We can see that the first common multiple for both numbers is 80. So, LCM of 16 and 20 is 80.

**Highest Common Factor (HCF):** The greatest factor between two or more numbers is known as HCF.

#### Example:

Highest common factor of 144, 104 and 160. Now write the prime factors of 144, 104 and 160.

$$144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$$

$$104 = 2 \times 2 \times 2 \times 13$$

$$160 = 2 \times 2 \times 2 \times 2 \times 2 \times 5$$

The common factors of 144, 104 and 160 are  $2 \times 2 \times 2 = 8$   
 Therefore, HCF (144, 104, 160) = 8

### HCF and LCM of Fractions

- **HCF of fraction** =  $\frac{\text{HCF of numerators}}{\text{LCM of denominators}}$
- **LCM of fraction** =  $\frac{\text{LCM of numerators}}{\text{HCF of denominators}}$

### LCM & HCF - Key Points for NORCET

- **HCF (Highest Common Factor):** Greatest number that divides all given numbers exactly.
- **LCM (Least Common Multiple):** Smallest number divisible by all given numbers.
- **Formula:**  $\text{HCF} \times \text{LCM} = \text{Product of two numbers (only for two numbers)}$ .
- **Use HCF when:**
  - Dividing into equal parts
  - Finding maximum length/size
  - Equal grouping or cutting
- **Use LCM when:**
  - Events occur/repeat together
  - Finding minimum time or quantity
  - Synchronizing schedules
- **Co-prime numbers:**
  - $\text{HCF} = 1$
  - $\text{LCM} = \text{Product of numbers}$

- **One number divides another:**
  - HCF = Smaller number
  - LCM = Larger number
- **Fractions:**
  - LCM = LCM of numerators / HCF of denominators
  - HCF = HCF of numerators / LCM of denominators
- **Special cases:**
  - $\text{HCF}(a, 0) = a$
  - $\text{LCM}(a, 0) = 0$

**Tip:** Use prime factorization method for quick and accurate results!

## TEST OF DIVISIBILITY

Divisibility by number	Divisibility Rule
<b>Divisible by 2</b>	A number whose unit digit is an even number, i.e., 0, 2, 4, 6, and 8 is divisible by 2, e.g., 78, 86, 70, etc.
<b>Divisible by 3</b>	If sum of all the digits of any number is divisible by 3 then the number is divisible by 3, e.g., 39, 81, etc.
<b>Divisible by 4</b>	If the last two digits of a number is divisible by 4 or include 00 then it is divisible by 4, e.g., 78924, 6732, etc.
<b>Divisible by 5</b>	Numbers whose unit digit is 0 or 5 are divisible by 5, e.g., 780, 7895, etc.
<b>Divisible by 6</b>	A number which is divisible by 2 and 3 both is divisible by 6, e.g., 4536, 8124, etc.
<b>Divisible by 8</b>	If the last three digits of a number is divisible by 8 or include 000 then it is divisible by 8, e.g., 5647472.
<b>Divisible by 9</b>	If sum of all the digits of any number is divisible by 9 then the number is divisible by 9, e.g., 3933, 729, etc.
<b>Divisible by 10</b>	Any number whose unit digit is 0 is divisible by 10, e.g., 3930, 7290, etc.
<b>Divisible by 11</b>	If the difference of the sums of the alternative digits of a number is divisible by 11 then the number is divisible by 11, e.g., 1331, 10824, etc.

### Example:

**Check if the number 2347974 is divisible by 8 or 11?**

**Solution:** For checking any number's divisibility with 8, we check for the divisibility of last three digits of a number by 8 or the presence of 000. So, here, 000 is not there. We will check the divisibility of 974 by 8.

974 is not completely divisible by 8.

For checking any number's divisibility with 11, we check for the difference of sum of alternate digits of the given number. If it comes out to be a factor of 11 then it will be divisible by 11.

So,  $(2 + 4 + 9 + 4) - (3 + 7 + 7) = 19 - 17 = 2$

This brings us to the conclusion that the given number is **neither divisible by 8 nor by 11**.

## SIMPLIFICATION

### BODMAS Rule

The BODMAS rule is essential in many mathematical problems. The full form of BODMAS is:

- B – Brackets,
- O – Order of powers or roots,
- D – Division,
- M – Multiplication,
- A – Addition,
- S – Subtraction.

## IMPORTANT ALGEBRAIC FORMULAS

Some important algebraic formulas are as follows:

- $a^2 - b^2 = (a - b)(a + b)$
- $(a + b)^2 = a^2 + 2ab + b^2$
- $a^2 + b^2 = (a + b)^2 - 2ab$
- $(a - b)^2 = a^2 - 2ab + b^2$
- $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$
- $(a - b - c)^2 = a^2 + b^2 + c^2 - 2ab + 2bc - 2ca$
- $(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$ ;  $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$
- $(a - b)^3 = a^3 - 3a^2b + 3ab^2 - b^3 = a^3 - b^3 - 3ab(a - b)$
- $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
- $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
- $(a + b)^4 = a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$
- $(a - b)^4 = a^4 - 4a^3b + 6a^2b^2 - 4ab^3 + b^4$

### Add Examples

#### Simplify

1.  $2x + 3x$   
Answer:  $5x$
2.  $2.8 + (6 \div 2) \times 3$   
Answer: 17
3.  $3 + 6 \times (5 + 4) \div 3 - 7$   
Answer: 11

## PERCENTAGE

$$\begin{aligned} & x^2 - 81 \\ &= (x)^2 - (9)^2 \\ &= (x - 9)(x + 9) \end{aligned}$$

A percentage is a number or ratio which is expressed as a fraction of 100 and it is denoted by using '%' symbol.

$$\text{Percentage} = \frac{\text{Value obtained}}{\text{Total value}} \times 100$$

## SOME IMPORTANT FORMULAS

$$\text{Percentage (\%)} = (\text{Part/Whole}) \times 100$$

$$\text{Finding part} = (\text{Percentage} \times \text{Whole}) / 100$$

$$\% \text{ Increase/Decrease} = (\text{Difference/Original}) \times 100$$

$$\text{New Value after \% increase} = \text{Original} \times (1 + \%/100)$$

$$\text{New Value after \% decrease} = \text{Original} \times (1 - \%/100)$$



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