

Clinical Microbiology

EMERGING AND RE-EMERGING INFECTIOUS DISEASES

Q. 1. Infectious diseases that have recently appeared within a population or those whose incidence or geographic range is rapidly increasing or threatens to increase in near future, are known as:

- (a) Emerging infections
- (b) Re-emerging infections
- (c) Both of the above
- (d) None of the above

Ans. (a)

Q. 2. Infectious diseases that once were major health problems globally or in a particular country, then declined dramatically, but are again becoming health problem for a significant proportion of the population are known as:

- (a) Emerging infections
- (b) Re-emerging infections
- (c) Both of the above
- (d) None of the above

Ans. (b)

Q. 3. Factor/s responsible for the emergence and re-emergence of communicable diseases is/are:

- (a) Unhygienic living conditions
- (b) Encroachment by humans to areas so far uninhabited leading to ecological changes
- (c) Development of insecticide resistance in vectors
- (d) All of the above

Ans. (d)

Q. 4. The problem of drug resistance has assumed alarming proportions in:

- (a) Tubercle bacilli
- (b) *Pseudomonas aeruginosa*
- (c) *Klebsiella pneumoniae*
- (d) All of the above

Ans. (d)

Q. 5. Following are the examples of re-emerging infections, except:

- (a) Malaria
- (b) Plague
- (c) AIDS
- (d) Typhoid fever

Ans. (c)

INFECTIVE SYNDROMES

Q. 1. Which of the following organisms may lead to pseudomembrane formation in the throat?

- (a) *Corynebacterium diphtheriae*
- (b) *Streptococcus pyogenes*
- (c) *Candida albicans*
- (d) All of the above

Ans. (d)

Q. 2. Which of the following organisms can be found normally in the throat?

- (a) α -haemolytic streptococci
- (b) Coagulase-negative staphylococci
- (c) *Haemophilus haemolyticus*
- (d) All of the above

Ans. (d)

Q. 3. Which of the following bacteria is the commonest cause of urinary tract infection?

- (a) *Escherichia coli*
- (b) *Pseudomonas aeruginosa*
- (c) *Staphylococcus aureus*
- (d) *Staphylococcus saprophyticus*

Ans. (a)

Q. 4. In which of the following sexually transmitted diseases, genital ulcer/s is/are painless?

- (a) Syphilis
- (b) Chancroid
- (c) Herpes genitalis
- (d) All of the above

Ans. (a) Syphilis causes painless genital ulcers. Chancroid and herpes genitalis cause painful genital ulcers.

Q. 5. Genital ulcer is painful in:

- (a) Syphilis
- (b) Chancroid
- (c) Lymphogranuloma venereum
- (d) Donovanosis

Ans. (b)

Q. 6. Which of the following bacteria is/are implicated as causative agent/s of non-gonococcal urethritis?

- (a) *Chlamydia trachomatis* (b) *Ureaplasma urealyticum*
(c) *Mycoplasma hominis* (d) All of the above

Ans. (d)

Q. 7. Genital discharge is present in:

- (a) Chancroid
(b) Gonorrhoea
(c) Herpes genitalis
(d) Lymphogranuloma venereum

Ans. (b) Gonorrhoea causes genital discharge. Chancroid and herpes genitalis cause painful genital ulcers, and lymphogranuloma venereum causes painless genital ulcers.

Q. 8. Which of the following bacteria can cause purulent meningitis?

- (a) *Haemophilus influenzae*
(b) *Streptococcus pneumoniae*
(c) *Neisseria meningitidis*
(d) All of the above

Ans. (d)

Q. 9. Which of the following agents may cause aseptic meningitis in immunocompromised hosts?

- (a) Herpes simplex (b) Enteroviruses
(c) Arboviruses (d) All of the above

Ans. (d)

Q. 10. Which of the following agents may cause aseptic meningitis in immunocompromised hosts?

- (a) *Cryptococcus neoformans*
(b) *Escherichia coli*
(c) *Haemophilus influenzae*
(d) *Streptococcus pneumoniae*

Ans. (a) *Cryptococcus neoformans* causes aseptic meningitis in immunocompromised hosts. *Escherichia coli*, *Haemophilus influenzae* and *Streptococcus pneumoniae* cause purulent meningitis in immunocompetent hosts.

Q. 11. Which of the following conditions can result in PUO?

- (a) Urinary tract infection (b) Enteric fever
(c) Malaria (d) All of the above

Ans. (d)

Q. 12. Which of the following agents is the commonest cause of infective endocarditis?

- (a) *Staphylococcus epidermidis*
- (b) *Candida* spp.
- (c) Viridans group of streptococci
- (d) Coliforms

Ans. (c)

Q. 13. Which of the following agents can cause diarrhoea?

- (a) *Rotavirus*
- (b) *Vibrio cholerae*
- (c) *Salmonella* serotype Typhimurium
- (d) All of the above

Ans. (d)

Q. 14. Which of the following protozoa can cause diarrhoea?

- (a) *Entamoeba histolytica*
- (b) *Giardia lamblia*
- (c) *Cryptosporidium parvum*
- (d) All of the above

Ans. (d)

Q. 15. Which of the following agents can cause dysentery?

- (a) *Shigella flexneri*
- (b) Enteroinvasive *Escherichia coli* (EIEC)
- (c) *Entamoeba histolytica*
- (d) All of the above

Ans. (d)

Q. 16. Which of the following bacteria can cause infective type of food poisoning?

- (a) *Salmonella* serotype Enteritidis
- (b) *Staphylococcus aureus*
- (c) *Clostridium botulinum*
- (d) All of the above

Ans. (a) *Salmonella* serotype Enteritidis causes infective type of food poisoning. When food contaminated with *S.* serotype Enteritidis is ingested, these organisms multiply and cause food poisoning. *Staphylococcus aureus* and *Clostridium botulinum* cause toxic type of food poisoning. Here preformed toxins are present in the food. Live organisms may or may not be present in the food.

Q. 17. Infective-toxic type of food poisoning is caused by:

- (a) *Clostridium perfringens*
- (b) *Salmonella* serotype Enteritidis
- (c) *Staphylococcus aureus*
- (d) *Salmonella* serotype Dublin

Ans. (a) *Clostridium perfringens* causes infective-toxic type of food poisoning. After ingestion of large number of vegetative organisms in food, multiplication occurs in the intestine for a brief period followed by sporulation and the production of enterotoxin which causes diarrhoea. *Salmonella* serotype Enteritidis and *Salmonella* serotype Dublin cause infective type and *Staphylococcus aureus* causes toxic type of food poisoning.

Q. 18. Which of the following anaerobes can cause wound infection?

- (a) Peptostreptococci
- (b) *Bacteroides* spp.
- (c) *Clostridium perfringens*
- (d) All of the above

Ans. (d)

Q. 19. A condition in which bacteria circulate in blood without overt disease is known as:

- (a) Bacteraemia
- (b) Septicaemia
- (c) Pyaemia
- (d) Endotoxaemia

Ans. (a)

- *Bacteraemia*: Presence of bacteria in blood without overt disease.
- *Septicaemia*: Bacteria circulate within the bloodstream with clinical symptoms.
- *Pyaemia*: Septicaemia with metastatic infection.

Q. 20. A 4-year-old child has developed acute sore throat. On examination, a pseudomembrane was observed in the posterior pharyngeal wall. The causative agent could be any of the following, except:

- (a) *Candida albicans*
- (b) *Leptotrichia buccalis*
- (c) *Corynebacterium diphtheriae*
- (d) *Haemophilus influenzae*

Ans. (d) *Haemophilus influenzae* causes epiglottitis, bacteraemia, pneumonia, septic arthritis and meningitis. It does not lead to formation of pseudomembrane in the throat. *Candida albicans*, *Leptotrichia buccalis* and *Corynebacterium diphtheriae* may cause sore throat with pseudomembrane formation.

Q. 21. A 40-year-old man following sexual contact has developed a painless ulcer on the prepuce. On examination, it was found to be 2 cm in diameter with indurated margins. Which of the following is the most probable diagnosis?

- (a) Chancroid
- (b) Syphilis
- (c) Donovanosis
- (d) Lymphogranuloma venereum

Ans. (b) Syphilis, a sexually transmitted disease, leads to the formation of painless genital ulcer with indurated margin. Chancroid forms painful non-indurated ulcer. Donovanosis and lymphogranuloma venereum lead to the formation of painless genital ulcer which do not have indurated margin.

Q. 22. A 3-year-old child has reported in the accident and emergency department with fever, irritability, lethargy and skin rash since the previous evening. On examination, the patient had a temperature of 40.5°C, petechial skin rashes and was drowsy. There was neck stiffness. The CSF was cloudy and had 500 white blood cells/microlitre (90% neutrophils). Which of the following microorganisms is **least likely** to be causative agent of the disease?

- (a) *Mycobacterium tuberculosis*
- (b) *Neisseria meningitidis*
- (c) *Haemophilus influenzae* type b
- (d) *Streptococcus pneumoniae*

Ans. (a) In both purulent and tubercular meningitis, the number of white blood cells is increased. About 90% of white blood cells are neutrophils and lymphocytes, respectively. Therefore, *Mycobacterium tuberculosis* is the least likely cause of this disease. *Neisseria meningitidis*, *Haemophilus influenzae* type b and *Streptococcus pneumoniae* cause purulent meningitis.

Q. 23. A 4-day-old premature neonate has developed meningitis. Which of the following organisms is **most likely** to be the causative agent?

- (a) *Streptococcus pneumoniae*
- (b) *Streptococcus agalactiae*
- (c) *Neisseria meningitidis*
- (d) *Haemophilus influenzae* type b

Ans. (b) Group B streptococci (*Streptococcus agalactiae*) are present in the vaginal flora of about 25% of all women. Early rupture of membranes, prolonged labour, low birth weight and heavy colonization of mother's vagina by group B streptococci lead to early-onset-type meningitis. Therefore, the correct answer is (b).

Q. 24. A 40-year-old individual has developed dysentery after eating improperly cooked contaminated food. Which of the following organisms could be suspected?

- (a) *Citrobacter freundii*
- (b) *Klebsiella pneumoniae*
- (c) *Salmonella* serotype Enteritidis
- (d) *Shigella* spp.

Ans. (d) *Shigella* spp. cause dysentery. *Citrobacter freundii* does not cause diarrhoea. *Klebsiella pneumoniae* and *Salmonella* serotype Enteritidis cause diarrhoea but not dysentery.

Q. 25. Rhinitis is caused by:

- (a) Rhinoviruses
- (b) Coronaviruses
- (c) Respiratory syncytial virus
- (d) All of the above

Ans. (d)

Q. 26. Pharyngitis is caused by:

- (a) Influenza viruses
- (b) Parainfluenza viruses
- (c) Rhinoviruses
- (d) All of the above

Ans. (d)

Q. 27. Bronchiolitis is caused by:

- (a) Respiratory syncytial virus
- (b) Parainfluenza virus types 1, 2 and 3
- (c) *Influenzavirus A*
- (d) All of the above

Ans. (d)

Q. 28. Which of the following viruses is the commonest cause of severe diarrhoea in infants?

- (a) *Rotavirus* group A
- (b) Norwalk virus
- (c) *Astrovirus*
- (d) Calciviruses

Ans. (a) Organisms listed at (a), (b), (c) and (d) cause diarrhoea. Among these, *Rotavirus* group A is the commonest cause of severe diarrhoea in infants.

Q. 29. Which of the following viruses cause/s viral haemorrhagic fever?

- (a) Lassa (b) Marburg
(c) Ebola (d) All of the above

Ans. (d)

Q. 30. Which of the following viruses causes maculopapular skin rash?

- (a) Varicella-zoster (b) *Enterovirus 71*
(c) Measles (d) *Molluscum contagiosum*

Ans. (c)

Q. 31. Which of the following viruses cause/s genital infection?

- (a) Herpes simplex virus type 2
(b) Human papillomavirus type 6
(c) *Molluscum contagiosum*
(d) All of the above

Ans. (d)

Q. 32. Which of the following sexually-transmitted viruses does not cause disease in genital tract itself?

- (a) Herpes simplex virus type 2
(b) Human immunodeficiency virus
(c) Human papillomavirus type 6
(d) *Molluscum contagiosum*

Ans. (b) Human immunodeficiency virus is a sexually transmitted virus but it does not cause disease in genital tract itself. Herpes simplex virus type 2, human papillomavirus type 6 and *molluscum contagiosum* cause genital tract disease.

Q. 33. Which of the following viruses can cause prenatal infection?

- (a) Rubella
(b) Cytomegalovirus
(c) Varicella-zoster
(d) All of the above

Ans. (d)

NOSOCOMIAL INFECTIONS

Q. 1. Which of the following bacteria can cause urinary tract infections in hospitalized patients?

- (a) *Escherichia coli* (b) *Klebsiella*
(c) *Proteus* (d) All of the above

Ans. (d)

Q. 2. Which of the following bacteria is/are implicated in hospital-associated respiratory infections?

- (a) *Staphylococcus aureus* (b) *Klebsiella*
(c) *Enterobacter* (d) All of the above

Ans. (d)

Q. 3. Which of the following bacteria can cause infection of burns in hospital patients?

- (a) *Pseudomonas aeruginosa* (b) *Acinetobacter*
(c) *Staphylococcus aureus* (d) All of the above

Ans. (d)

Q. 4. Which of the following pathogens can be transmitted by air in the hospital?

- (a) *Legionella*
(b) Human immunodeficiency virus
(c) Hepatitis B virus
(d) All of the above

Ans. (a)

Q. 5. Nosocomial infection can occur by:

- (a) Contact spread (b) Airborne spread
(c) Oral route (d) All of the above

Ans. (d)

ANTIMICROBIAL SENSITIVITY TESTING

Q. 1. Presence of thymidine in the medium can interfere with the action of:

- (a) Trimethoprim (b) Aminoglycosides
(c) Tetracyclines (d) All of the above

Ans. (a) Large quantities of thymidine are present in some lots of media. Some organisms can use thymidine to bypass the mechanism of action of trimethoprim and grow, even though they are sensitive to the antibiotic.

Q. 2. Which of the following media is most suitable for antibiotic sensitivity testing?

- (a) Mueller-Hinton medium
(b) Nutrient agar
(c) Blood agar
(d) MacConkey agar

Ans. (a) Mueller-Hinton medium is most suitable for testing antibiotic sensitivity. This medium has minimal inhibitory effect on sulphonamide and trimethoprim.

Q. 3. The pH of the medium for antibiotic sensitivity testing should be:

- (a) 6.0–6.2 (b) 6.8–7.0
(c) 7.2–7.4 (d) 7.6–7.8

Ans. (c)

Q. 4. The inoculum for antibiotic sensitivity by disc diffusion method should contain:

- (a) 10^4 cfu/ml (b) 10^5 cfu/ml
(c) 10^6 cfu/ml (d) 10^8 cfu/ml

Ans. (d)

Q. 5. In Stokes disc diffusion method, if the zone size is equal to, larger than or not more than 3 mm smaller than the control, a strain is considered:

- (a) Sensitive (b) Intermediate
(c) Resistant (d) None of the above

Ans. (a)

Q. 6. In Stokes disc diffusion method, if the zone size of the test strain is less than 2 mm, a strain is considered:

- (a) Sensitive (b) Intermediate
(c) Resistant (d) None of the above

Ans. (c)

Q. 7. Addition of 5% salt in the medium is done when testing methicillin susceptibility of:

- (a) Staphylococci
(b) Pneumococci
(c) Coliforms
(d) Non-fermenting Gram-negative bacilli

Ans. (a) Addition of 5% salt in the medium is done when testing methicillin susceptibility of staphylococci.

Q. 8. For broth dilution tests for determination of MIC, the final inoculum should be:

- (a) 10^4 cfu/ml (b) 10^5 cfu/ml
(c) 10^6 cfu/ml (d) 10^7 cfu/ml

Ans. (b)

Q. 9. For agar dilution tests for determination of MIC, the final inoculum should be:

- (a) 10^4 cfu/spot (b) 10^5 cfu/spot
(c) 10^6 cfu/spot (d) 10^7 cfu/spot

Ans. (a)

Q. 10. A pH of greater than 7.2–7.4 favours the action of:

- (a) Tetracyclines
- (b) Novobiocin
- (c) Fusidic acid
- (d) All of the above

Ans. (d)

Q. 11. How many antibiotic discs can be accommodated on a single 100 mm diameter plate in Stokes disc diffusion method?

- (a) Five
- (b) Six
- (c) Seven
- (d) Eight

Ans. (b)

Q. 12. Antimicrobial sensitivity testing makes use of the discs of the diameter of:

- (a) 2 mm
- (b) 4 mm
- (c) 6 mm
- (d) 8 mm

Ans. (c)

PROPHYLACTIC IMMUNIZATION

Q. 1. Which of the following vaccines is/are killed vaccine/s?

- (a) Pertussis vaccine
- (b) Cholera vaccine
- (c) Japanese encephalitis vaccine
- (d) All of the above

Ans. (d)

Q. 2. Which of the following vaccines is/are prepared from live microbes manipulated and attenuated?

- (a) BCG vaccine
- (b) Oral polio vaccine
- (c) Measles vaccine
- (d) All of the above

Ans. (d)

Q. 3. Which of the following vaccines is/are subunit vaccine/s?

- (a) Hepatitis B vaccine (plasma derived)
- (b) Vi typhoid fever vaccine
- (c) Meningococcal vaccine
- (d) All of the above

Ans. (d)

Q. 4. Which of the following vaccines is/are prepared from microbial toxin/s?

- (a) Diphtheria vaccine
- (b) Tetanus toxoid vaccine
- (c) Both of the above
- (d) None of the above

Ans. (c)

Q. 5. Which of the following vaccines should be administered at the birth of a child?

- (a) BCG (b) DPT
(c) Measles (d) All of the above.

Ans. (a)

Q. 6. Measles vaccine should be administered at the age of:

- (a) 3 months (b) 6 months
(c) 9 months (d) 12 months

Ans. (c)

Q. 7. Specific immunoglobulins are available for passive immunization against:

- (a) Tetanus (b) Rabies
(c) Hepatitis B (d) All of the above

Ans. (d)

Q. 8. For which of the following diseases combined passive and active immunization is often undertaken?

- (a) Tetanus (b) Diphtheria
(c) Rabies (d) All of the above

Ans. (d)

Q. 9. Which of the following diseases has/have remained without useful vaccine/s?

- (a) Malaria (b) Leprosy
(c) AIDS (d) All of the above

Ans. (d)