

Assisted Reproduction Technology

VIVA VOCE

Q. 1 What is *in vitro* fertilization?

- *In vitro* fertilization is a process of fertilizing ovum outside the body.
- The first baby born by *in vitro* fertilization was Louise Brown on 25th July 1978. Kanupriya Agarwal (Durga) is world's second and India's first IVF baby born on 3rd October 1978. Founders of IVF are Robert Edward (The Noble Prize, 2010) and Patrick Steptoe.

Q. 2 What are the stages of IVF?

The basic steps involved in IVF are as follows:

Stage 1: Ovarian stimulation and monitoring

Stage 2: Oocyte retrieval

Stage 3: Fertilization

Stage 4: Embryo development

Stage 5: Embryo transfer

Stage 6: Luteal phase support

Some Interesting Facts

- Luteinizing hormone (LH): It is secreted by pituitary gland and induces ovulation.
- Ultrasound examinations are used for monitoring follicle growth in ovaries.
- Stimulation of ovary by various fertility medicines may produce ovarian hyperstimulation syndrome (OHSS).

Q. 3 What is oocyte retrieval?

- It is also called egg retrieval or egg pickup.
- Methods of egg pickup:
 1. Ultrasound-guided aspiration
 2. Laparoscopy-assisted aspiration.

Q. 4 What is luteal phase support in ART?

- In ART, collection of ovum results in improper formation of corpus luteum. Hence, there will be lack of sufficient estrogen and progesterone hormone. Hence, in IVF pregnancy should be supported at least for first 2 weeks after ovum collection with progesterone.

Some Interesting Facts

- Pregnancy can be confirmed by detection of hCG hormone in maternal blood or ultrasonography after 2 weeks of fertilization date.

Q. 5 What is success rate in ART?

- Live birth rate with ART is to the tune of 30%, clinical pregnancy rate could be 40–50%. The success rate is influenced by many factors, such as maternal age, cause of infertility, sperm quality and so on.

Q. 6 What is assisted hatching?

- *Assisted hatching*: Disintegration of zona pellucida (hatching) is essential for implantation. In case of repeated IVF failures, older females or cryopreserved egg, assisted hatching may be required. It is done with the help of LASER.

Q. 7 What is intracytoplasmic sperm injection?

- Intracytoplasmic sperm injection (ICSI) is a procedure that involves a direct transfer of a single sperm into a cytoplasm of oocyte.

Q. 8 What is artificial insemination?

- Artificial insemination is the deliberate introduction of sperm into uterus or cervix by means other than sexual intercourse. The artificial insemination is of two types:
 1. Intrauterine insemination (IUI), and
 2. Intracervical insemination (ICI).

Q. 9 What is GIFT and ZIFT?

- *Gamete intrafallopian transfer (GIFT)*: In assisted-reproductive technology, collected eggs and sperms are transferred into the fallopian tube using a laparoscope. This technique is currently not in use.
- *Zygote intrafallopian transfer (ZIFT)*: In ART, *in vitro* fertilized egg is transferred to fallopian tube using a laparoscope.

Some Interesting Facts

- Human oocyte cryopreservation or egg freezing is a procedure to preserve an ovum. The extracted ova are frozen and stored in liquid nitrogen at -196°C .

Multiple Choice Questions

Q. 1 About _____ in 6 couples have difficulty in conceiving naturally.

- A. 1 B. 2
C. 3 D. 4

Q. 2 About _____ % of infertile couples can conceive with medical intervention.

- A. 70 B. 80
C. 90 D. 100

Q. 3 Founders of IVF are Robert Edward and _____.

- A. Patrick Steptoe
B. Louise Brown
C. Subhash Mukhopadhyay
D. Adriana Iliescu

Q. 4 *In vitro* fertilization is useful in which of the following conditions?

- A. Blockage of fallopian tube
B. Problem with ovulation
C. Endometriosis
D. All of the above

Q. 5 _____ induces ovulation.

- A. Luteinizing hormone
B. Follicle-stimulating hormone
C. Oestrogen
D. Oxytocin

Q. 6 Injectable human chorionic gonadotropin or luteinizing hormone is given _____ hours before preplanned egg pickup.

- A. 12 B. 24
C. 36 D. 72

Q. 7 In IVF, eggs are examined microscopically to confirm fertilization _____ hours post insemination.

- A. 8 B. 16
C. 24 D. 32

Q. 8 IVF pregnancy should be supported at least for first _____ week/s after ovum collection with progesterone.

- A. 1 B. 2
C. 3 D. 4

Q. 9 At the earliest, the pregnancy can be confirmed by detection of hCG hormone in maternal blood or ultrasonography after _____ week/s of fertilization date.

- A. 1 B. 2
C. 3 D. 4

Q. 10 The success rate of ART is influenced by _____.

- A. Maternal age B. Cause of infertility
C. Sperm quality D. All of the above

Q. 11 _____ is the deliberate introduction of sperm into uterus or cervix by means other than sexual intercourse.

- A. Artificial insemination
B. Intracutoplasmic sperm injection
C. Surrogate motherhood
D. *In vitro* fertilization

Q. 12 In cryopreservation, the extracted ova are frozen and stored in liquid nitrogen at:

- A. -4°C B. -20°C
C. -40°C D. -196°C

Reference: *Textbook of Human Embryology*, 2/e, Yogesh Sontakke.

1. A. 1 (Ref: Page 35)
2. C. 90 (Ref: Page 35)
3. A. Patrick Steptoe (Ref: Page 35)
4. D. All of the above (Ref: Page 35)
5. A. Luteinizing hormone (Ref: Page 36)
6. C. 36 (Ref: Page 36)
7. B. 16 (Ref: Page 37)
8. B. 2 (Ref: Page 37)
9. B. 2 (Ref: Page 37)
10. D. All of the above (Ref: Page 37)
11. A. Artificial insemination (Ref: Page 38)
12. D. -196°C (Ref: Page 39)