CHAPTER 3

# HUMAN REPRODUCTION

## MULTIPLE-CHOICE QUESTIONS

1. Choose the incorrect statement from the following:
   a. In birds and mammals internal fertilisation takes place
   b. Colostrum contains antibodies and nutrients
   c. Polyspermy in mammals is prevented by the chemical changes in the egg surface
   d. In the human female implantation occurs almost seven days after fertilisation

2. Identify the correct statement from the following:
   a. High levels of estrogen triggers the ovulatory surge.
   b. Oogonial cells start to proliferate and give rise to functional ova in regular cycles from puberty onwards.
   c. Sperms released from seminiferous tubules are highly motile.
   d. Progesterone level is high during the post ovulatory phase of menstrual cycle.

3. Spot the odd one out from the following structures with reference to the male reproductive system:
   a. Rete testis
   b. Epididymis
   c. Vasa efferentia
   d. Isthmus

4. Seminal plasma, the fluid part of semen, is contributed by.
   i. Seminal vesicle
   ii. Prostate gland
   iii. Urethra
   iv. Bulbourethral gland
   (a) i and ii (b) i, ii and iv (c) ii, iii and iv (d) i and iv

5. Spermiation is the process of the release of sperms from:
   a. Seminiferous tubules
   b. Vas deferens
   c. Epididymis
   d. Prostate gland

6. Mature Graafian follicle is generally present in the ovary of a healthy human female around:
   a. 5 – 8 day of menstrual cycle
   b. 11 – 17 day of menstrual cycle
   c. 18 – 23 day of menstrual cycle
   d. 24 – 28 day of menstrual cycle

7. Acrosomal reaction of the sperm occurs due to:
   a. Its contact with zona pellucida of the ova
   b. Reactions within the uterine environment of the female
   c. Reactions within the epididymal environment of the male
   d. Androgens produced in the uterus

8. Which one of the following is not a male accessory gland?
   a. Seminal vesicle
   b. Ampulla
   c. Prostate
   d. Bulbourethral gland

9. The spermatogonia undergo division to produce sperms by the process of spermatogenesis. Choose the correct one with reference to above.
   a. Spermatogonia have 46 chromosomes and always undergo meiotic cell division
   b. Primary spermatocytes divide by mitotic cell division
   c. Secondary spermatocytes have 23 chromosomes and undergo second meiotic division
   d. Spermatozoa are transformed into spermatids

10. Match between the following representing parts of the sperm and their functions and choose the correct option.

| | Column I | | Column II |
|---|---|---|---|
| A. | Head | i. | Enzymes |
| B. | Middle piece | ii. | Sperm motility |
| C. | Acrosome | iii. | Energy |
| D. | Tail | iv. | Genetic material |

options:

a. A-ii, B-iv, C-i, D-iii
b. A-iv, B-iii, C-i, D-ii
c. A-iv, B-i, C-ii, D-iii
d. A-ii, B-i, C-iii, D-iv

11. Which among the following has 23 chromosomes?

a. Spermatogonia
b. Zygote
c. Secondary oöcyte
d. Oögonia

12. Match the following and choose the correct options:

| | Column I | | Column II |
|---|---|---|---|
| A. | Trophoblast | i. | Embedding of blastocyst in the endome trium |
| B. | Cleavage | ii. | Group of cells that would differentiate as embryo |
| C. | Inner cell mass | iii. | Outer layer of blastocyst attached to the endometrium |
| D. | Implantation | iv. | Mitotic division of zygote |

Options:

a. A-ii, B-i, C-iii, D-iv
b. A-iii, B-iv, C-ii, D-i
c. A-iii, B-i, C-ii, D-iv
d. A-ii, B-iv, C-iii, D-i

13. Which of the following hormones is not secreted by human placenta?

a. hCG
b. Estrogens
c. Progesterone
d. LH

14. The vas deferens receives duct from the seminal vesicle and opens into urethra as:

a. Epididymis
b. Ejaculatory duct
c. Efferent ductule
d. Ureter

15. Urethral meatus refers to the:
    a. Urinogenital duct
    b. Opening of vas deferens into urethra
    c. External opening of the urinogenital duct
    d. Muscles surrounding the urinogenial duct

16. Morula is a developmental stage:
    a. Between the zygote and blastocyst
    b. Between the blastocyst and gastrula
    c. After the implantation
    d. Between implantation and parturition

17. The membranous cover of the ovum at ovulation is:
    a. Corona radiata
    b. Zona radiata
    c. Zona pellucida
    d. Chorion

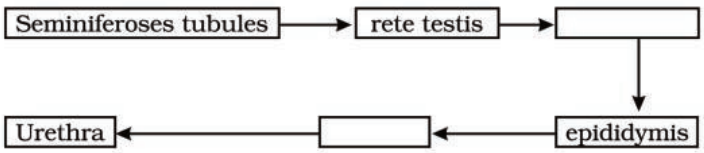
18. Identify the odd one from the following:
    a. Labia minora
    b. Fimbriae
    c. Infundibulum
    d. Isthmus

## VERY SHORT ANSWER TYPE QUESTIONS

1. Given below are the events in human reproduction. Write them in correct sequential order.

   Insemination, gametogenesis, fertilisation, parturition, gestation, implantation

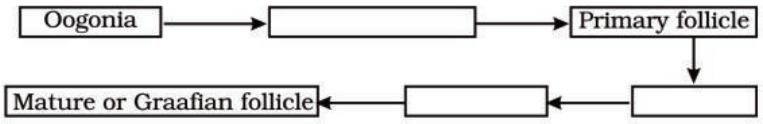
2. The path of sperm transport is given below. Provide the missing steps in blank boxes.



3. What is the role of cervix in the human female reproductive system?
4. Why are menstrual cycles absent during pregnancy.
5. Female reproductive organs and associated functions are given below in column A and B. Fill the blank boxes.

| Column A | Column B |
|---|---|
| Ovaries | Ovulation |
| Oviduct | a |
| b | Pregnancy |
| Vagina | Birth |

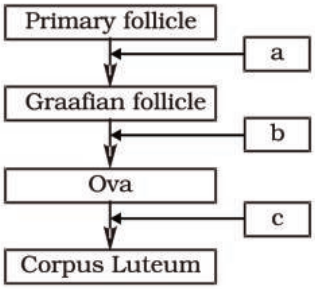
6. From where the parturition signals arise-mother or foetus? Mention the main hormone involved in parturition.
7. What is the significance of epididymis in male fertility?
8. Give the names and functions of the hormones involved in the process of spermatogenesis. Write the names of the endocrine glands from where they are released.
9. The mother germ cells are transformed into a mature follicle through series of steps. Provide the missing steps in the blank boxes.




10. During reproduction, the chromosome number (2n) reduces to half (n) in the gametes and again the original number (2n) is restored in the offspring, What are the processes through which these events take place?
11. What is the difference between a primary oöcyte and a secondary oöcyte?
12. What is the significance of ampullary–isthmic junction in the female reproductive tract?
13. How does zona pellucida of ovum help in preventing polyspermy?
14. Mention the importance of LH surge during menstrual cycle.
15. Which type of cell division forms spermatids from the secondary spermatocytes?

## SHORT ANSWER TYPE QUESTIONS

1. A human female experiences two major changes, menarche and menopause during her life. Mention the significance of both the events.
2. a. How many spermatozoa are formed from one secondary spermatocyte?
   b. Where does the first cleavage division of zygote take place?
3. Corpus luteum in pregnancy has a long life. However, if fertilisation does not take place, it remains active only for 10-12 days. Explain.
4. What is foetal ejection reflex? Explain how it leads to parturition?
5. Except endocrine function, what are the other functions of placenta.
6. Why doctors recommend breast feeding during initial period of infant growth?
7. What are the events that take place in the ovary and uterus during follicular phase of the menstrual cycle.
8. Given below is a flow chart showing ovarian changes during menstrual cycle. Fill in the spaces giving the name of the hormones responsible for the events shown.




9. Give a schematic labelled diagram to represent oögenesis (without descriptions)
10. What are the changes in the oogonia during the transition of a primary follicle to Graafian follicle?

## LONG ANSWER QUESTIONS

1. What role does pituitary gonadotropins play during follicular and ovulatory phases of menstrual cycle? Explain the shifts in steroidal secretions.

2. Meiotic division during oogenesis is different from that in spermatogenesis. Explain how and why?

3. The zygote passes through several developmental stages till implantation, Describe each stage briefly with suitable diagrams.

4. Draw a neat diagram of the female reproductive system and label the parts associated with the following (a) production of gamete, (b) site of fertilisation (c) site of implantation and, (d) birth canal.

5. With a suitable diagram, describe the organisation of mammary gland.