



Grade 12 Biology

Chapter 3: Human Reproduction

Question bank 1

Q. 1. Write the location and function of the Sertoli cells in humans.

Ans. Sertoli cells are present in seminiferous tubules. They provide nutrition to the germ cells or sperms.

Q. 2. Mention the location and the function of Leydig cells in humans.

Ans. Leydig cells are present in the regions called interstitial spaces outside the seminiferous tubules. They synthesise and secrete androgens (testosterone).

Q. 3. Mention the function of mitochondria in sperm.

Ans. Provide energy for the movement of sperm tail.

Q. 4. When do the oogenesis and the spermatogenesis initiate in human females and males respectively?

Ans. Oogenesis in human females initiate at the foetal/embryonic stage. Spermatogenesis in human males starts at puberty.

Q. 5. Males in whom testes fail to descend to the scrotum are generally infertile. Why?

Ans. If the testes fail to descend to the scrotum, gametogenesis could be inhibited. The process of spermatogenesis requires a marginally lesser (2°C less) ambient temperature than that in the abdominal cavity.

Q. 6. Name the hormones produced only during pregnancy in a human female. Mention their source organ.

Ans. During pregnancy, placenta produces hormones like human chorionic gonadotropin and human placental lactogen and ovary produces relaxin.

Q. 7. List the changes that the primary oocyte undergoes in the tertiary follicular stage in the human ovary.

Ans. The primary oocyte within the tertiary follicle grows in size and completes its first meiotic division to form secondary oocyte and first polar body.

Q. 8. How is the entry of only one sperm and not many ensured into an ovum during fertilisation in humans?

Ans. During fertilisation a sperm head comes in contact with zona pellucida layer of ovum and induces changes in the membrane that block the entry of additional sperms.

Q. 9. Mention the function of trophoblast in human embryo.

Ans. Trophoblast is the outer layer of blastocyst which helps in the attachment of blastocyst to the endometrium of the uterus.

Q. 10. Explain the function of umbilical cord.

Ans. Umbilical cord transports nutrients and respiratory gases and metabolic wastes to and from mother and foetus.

Q. 11. What name is given to the cells of inner cell mass, that have the potential to give rise to all tissues and organs in a human being?

Ans. Stem cells

Q. 12. What is corona radiata?

Ans. The follicle cells that envelope the egg outside zona pellucida are called corona radiata.

Q. 13. Which part of the blastula is destined to form the germ layers of the developing embryo in humans?

Ans. Inner cell mass

Q. 14. Why are the human testes located outside the abdominal cavity? Name the pouch in which they are present.

Ans. The human testes need lower temperature, 2 – 2.5°C less than the body temperature, for the formation of sperms which is provided outside the body. Testes are present in scrotal sac or scrotum.

Q. 15. Where is acrosome present in humans? Write its function. [

Ans. Acrosome is present on the sperm head. It has enzymes to help the sperm enter into the cytoplasm of ovum through zona pellucida and plasma membrane to facilitate entry of sperm nucleus for fertilisation.

Q. 16. Write the function of each of the following: (a) Middle piece in human sperm. (b) Luteinising hormone in human males.

Ans. (a) Provides energy for movement as it contains mitochondria. (b) Stimulates synthesis and secretion of androgens or male hormones for spermatogenesis.

Q. 17. Write the function of each of the following: (a) Seminal vesicle (b) Acrosome of human sperm.

Ans. (a) It is responsible for storage and transport of sperms. It provides secretions for motility and nourishment of sperms. (b) It helps the sperm to enter into the cytoplasm of the ovum through the zona pellucida and provides enzymes for fertilisation.

Q. 18. Write the location and functions of myometrium and endometrium.

Ans. Endometrium is the inner layer of uterus. It assists in cyclic changes during menstruation and implantation of embryo. Myometrium is the middle layer of uterus. It consists of smooth muscles and thus assists in contractions of the uterus during parturition.

Q. 19. Why does corpus luteum secrete large amount of progesterone during luteal/secretory phase of the menstrual cycle?

Ans. The hormone progesterone is essential for the maintenance of endometrium of the uterus. It maintains the endometrial lining of uterus so that the foetus may get implanted in the uterus. So, corpus luteum secretes large amounts of progesterone during the luteal phase of menstrual cycle.

Q. 20. Mention the fate of corpus luteum and its effect on the uterus in absence of fertilisation of the ovum in a human female.

Ans. In the absence of fertilisation, corpus luteum degenerates and this causes disintegration of the endometrium of ovary, leading to menstruation.

Q. 21. Explain the events that follow up to fertilisation when the sperms come in contact with the ovum in the fallopian tube of a human female.

Ans. The secretion of the acrosome help the sperm enter into the cytoplasm of ovum through zona pellucida and the plasma membrane. This induce the completion of second meiotic division of the secondary oocyte, forming second polar body and a haploid ovum. Soon the haploid nucleus of the sperm and that of the ovum fuse together to form a diploid zygote.

Q. 22. Differentiate between menarche and menopause.

Ans. Menarche is the beginning of menstrual cycle at puberty. It starts at the age of 13–15 years. Menopause is the cessation of menstrual cycle. It happens around 50 years of age.

Q. 21. Write the effect of the high concentration of LH on a mature Graafian follicle.

Ans. In high concentration of LH, the mature Graafian follicle ruptures to release the secondary oocyte or ovum from the ovary by the process of ovulation.

Q. 22. After implantation interdigitation of maternal and foetal tissues takes place. Identify the tissues involved and justify their role.

Ans. After implantation interdigitation of maternal and foetal tissues results in formation of structural and functional unit between embryo and maternal body called placenta. It facilitates supply of oxygen and nutrients to the embryo, removal of carbon dioxide and excretory material and also acts as an endocrine tissue and produces hormones like HCG, hPL, estrogen, progesterone and relaxin.

Q. 23. Write the function of each one of the following: (i) (Oviducal) Fimbriae (ii) Oxytocin

Ans. (i) Collection of ovum released by ovary. (ii) Cause uterine contraction for parturition; promotes milk ejection.

Q. 24. State the fate of trophoblast of a human blastocyst at the time of implantation and that of the inner cell mass immediately after implantation.

Ans. The trophoblast layer gets attached to the endometrium, and the inner cell mass gets differentiated as the embryo.

Q. 25. Placenta acts as an endocrine tissue. Justify.

Ans. Placenta produces several hormones like human chorionic gonadotropin (hCG), human placental lactogen (hPL), estrogens, progesterones that are essential to maintain pregnancy. This way placenta acts as an endocrine tissue.

Q. 26. (i) Where do the signals for parturition originate from in humans?

(ii) Why is it important to feed the newborn babies on colostrum?

Ans. (i) Signals for parturition originate from the fully developed foetus the placenta which induce uterine contractions. This is called as foetal ejection reflex. (Any one) (ii) Colostrum contains antibodies (IgA), to (passively) immunise the baby.

Q. 27. State the role of oxytocin in parturition. What triggers its release from the pituitary?

Ans. Oxytocin acts on uterine muscle and cause stronger uterine contraction. This leads to expulsion of the foetus or baby out of uterus.

Q. 28. When and where do chorionic villi appear in humans? State their functions.

Ans. Chorionic villi appear after implantation on the trophoblast. It becomes interdigitated with uterine tissue to form the placenta and increases the surface area for exchange of materials between the mother and the embryo.

Q. 29. Why is breast-feeding recommended during the initial period of an infant's growth? Give reasons.

OR

Medically it is advised to all young mothers that breast feeding is the best for their newborn babies. Do you agree? Give reasons in support of your answer.

Ans. The milk produced during the initial few days of lactation is called colostrum. It contains several antibodies (IgA) absolutely essential, to develop passive immunity in the new-born babies. It also contains nutrients such as calcium, fats, lactose. Breast feeding also develops a bond between mother and child.

Q. 30. What stimulates pituitary to release the hormone responsible for parturition? Name the hormone.

Ans. The signal from the fully developed foetus and placenta or the foetal ejection reflex induces mild uterine contraction. The hormone released is oxytocin.

Q. 31. (i) Label the following cells in the seminiferous tubule:

- (a) Cells that divide by mitosis to increase their number.
- (b) Cells that undergo Meiosis I.
- (c) Cells that undergo Meiosis II.
- (d) Cells that help in the process of spermiogenesis.

(ii) Mention the role of Leydig cells.

Ans. (i) (a) Cells that divide by mitosis to increase their number—Spermatogonia (b) Cells that undergo Meiosis I—Primary spermatocytes (c) Cells that undergo Meiosis II—Secondary spermatocytes (d) Cells that help in the process of spermiogenesis—Sertoli cells

(ii) Role of Leydig cells: They synthesise and secrete testicular hormones called androgens

Q. 32. Name the hormones influencing (i) ovulation, (ii) development of corpus luteum.

Ans. (i) Ovulation: Gonadotropins like luteinising hormone and follicular stimulating hormone, and estrogen. (ii) Development of corpus luteum: Luteinising hormone and progesterone

Q. 33. Differentiate between: (a) Vas deferens and vasa efferentia (b) Spermatogenesis and spermiogenesis

S.No.	Vas deferens	Vasa efferentia
(i)	Carries sperm from epididymis to urethra.	Carries sperm from testis to epididymis.
(ii)	One in number from each testis.	Many in number.

Table 3.3: Difference between spermatogenesis and spermiogenesis

Spermatogenesis	Spermiogenesis
Process of production of sperms (by meiosis).	Process by which spermatids are transformed to spermatozoa.