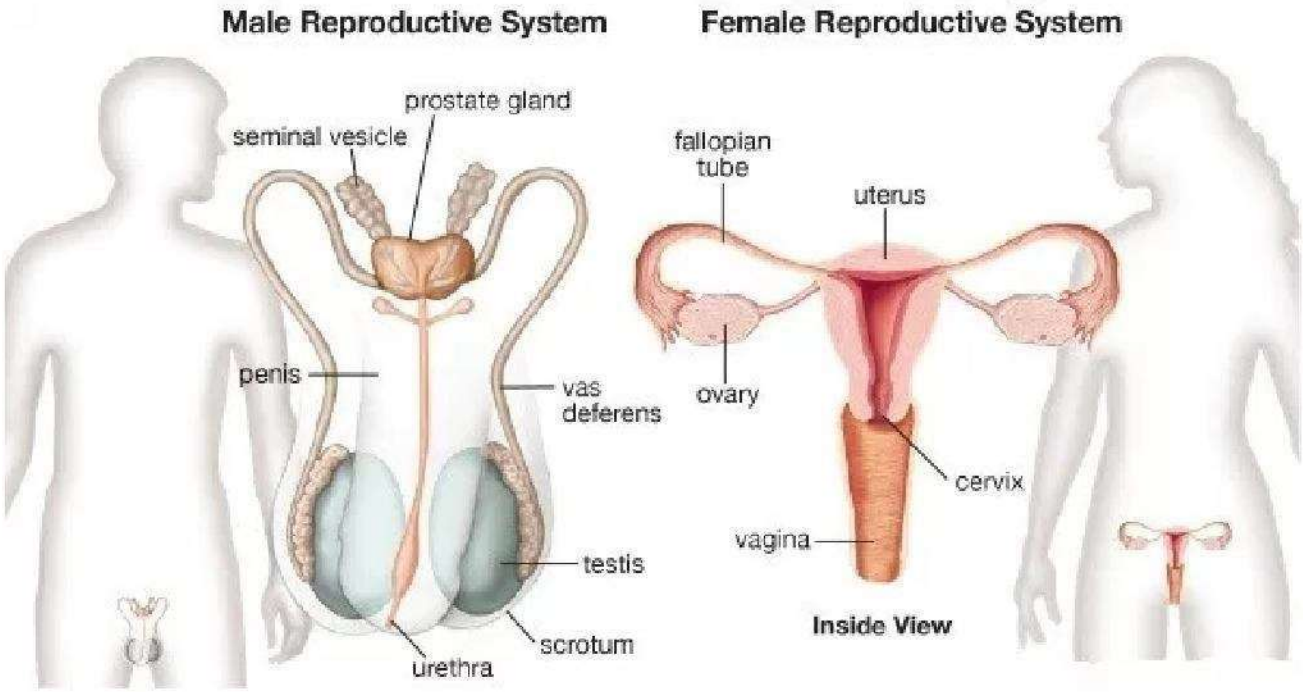
TENDER HEART HIGH SCHOOL, SECTOR 33 B, CHD
CLASS -X
DATE - 18.11.2024

Chapter 10. The Reproductive System



Short Questions

Question 1: What is sexual reproduction ? What are its essential features ?

Answer: It is a type of reproduction usually found in higher animals and plants where male and female sexes produce male and female heterogametes separately, which on fertilisation produce a zygote.

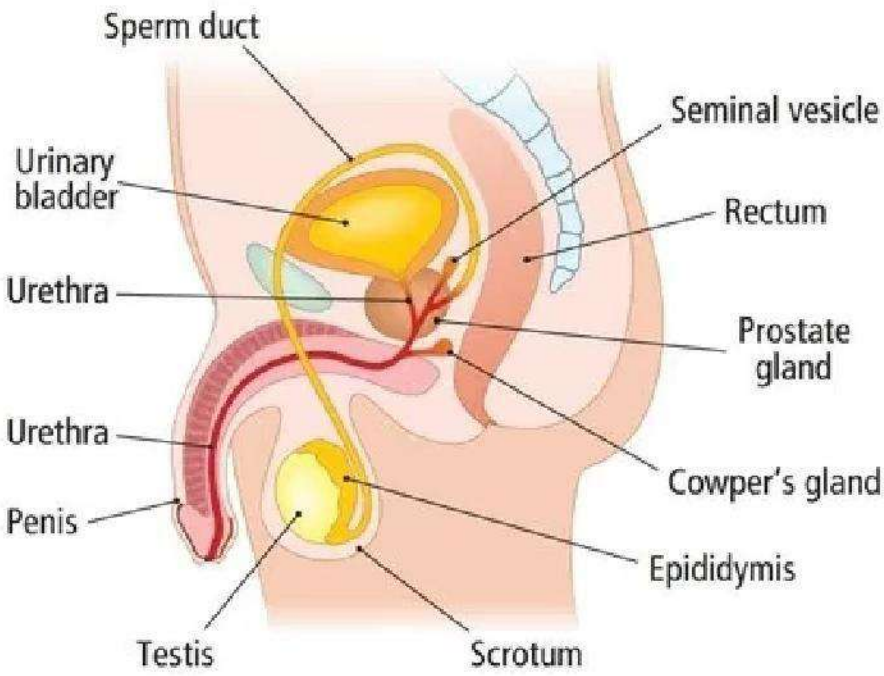
Question 2: Give two important unique features of the human reproductive system.

Answer: (i) It has the longest reproductive phase.
(ii) There is no specific breeding season. It can take place any time during the year.

Question 3: Name the various organs of male reproductive system of man.

Answer: Male reproductive organs of man:

1. A pair of testes.
2. A pair of epididymis
3. A pair of vas deferentia
4. A pair of seminal vesicle
5. Urethra
6. Penis
7. Male reproductive glands (Cowper's and Prostate gland).



Question 4: What are the functions of testes ?

Answer: The main function of testes is the production or formation of sperms. They also secrete male sex hormone testosterone which is responsible for the development of secondary sexual characters in male.

Question 5: Write in sequence the regions which a mature sperm travels from the seminiferous tubules up to the urethral opening ?

Answer: Course of sperms in a male

Seminiferous tubules
(Produce sperms)
↓
Network of tubules
↓
Efferent ducts
↓
Upper part (head) of epididymis
↓
Middle part (body) of epididymis
↓
Hind part (tail) of epididymis
↓
Sperm duct (vas deferens)
↓
Urethra (in penis).

Question 6: What is semen ?

Answer: Semen is a fluid which contains sperm cells, secretion of accessory glands, fibrinogen, thromboplastin and calcium salts.

Question 7: What is fertilization ? Name the site of fertilization in human female.

Answer: The union of male and female gametes to form the zygote is called fertilization. In human female the site of fertilization is oviduct or fallopian tube.

Question 8: What are the signs of puberty in human male and female ?

Answer: In a boy: Change of voice and discharge of semen.
In a girl: Appearance of the menses, appearance of mammary glands and widening of the hips.

Question 9: What differences are there in number, structure and activity of the male and female gametes in man?

Answer:

Male Gametes	Female Gametes

Number: Very large.	Normally one at a time.
Structure: A sperm is about 50-55 microns long with head, acrosome neck and lashing tail.	It is spherical and non-motile.
Activity: With the help of lashing tail, it moves actively towards the oviducts.	Passively carried from ovary to oviduct.

Question 10: (i) Rewrite the following terms in a correct and logical sequence:
Luteal phase, follicular phase, menstrual phase, ovulatory phase.
(ii) Differentiate on the basis of what is indicated in brackets :
Prostate gland and Cowper's gland (the nature of secretion)

Answer: (i) Menstrual gland phase, follicular phase, ovulatory phase, luteal phase.
(ii) Prostate gland secretes an alkaline secretion for the maintenance of the sperms while Cowper's gland secretion is meant for lubrication.

Question 11: Define the four stages in the uterine cycle.

Answer: The uterine cycle consists of four distinct stages as follows :
(i) Menstruation: It lasts for about five days.
(ii) Follicle stage: From the end of menstruation to the release of ovum, it lasts for 10-14 days.
(iii) Ovulation: It is the release of ovum from the ovary.
(iv) Corpus luteum stage : It lasts from ovulation to menstruation for about 10-14 days.

Question 12: (i) Where does fertilization occur ?
(ii) Name two essential structures which take part in fertilization.
(iii) What happens to the zygote after fertilization ?

Answer: (i) In the Fallopian tube.
(ii) The egg and sperm fuse to form zygote during fertilization.
(iii) After fertilization, the zygote divides to form several celled embryo which is implanted in the uterus for further development.

Question 13: (i) Name the female sex hormones and structures which secrete them.
(ii) How is the foetus protected ?

Answer: (i) 1. Oestrogen produced by ovarian follicle and placenta.
2. Progesterone produced by corpus luteum.
3. Relaxin produced by ovary and placenta.
(ii) The human foetus is protected by the amnion layer having amniotic fluid and the yolk sac.

Question 14: What is a Placenta ? How is it formed ? What are its functions ?

Answer: The placenta is an organ composed of blood capillaries, villi, connecting tissue and latent endocrinal cells. It is formed by the union of uterine endometrial tissue, chorion

and allantois (embryonic tissue). It is attached to the wall of the uterus and through it, exchange of nutrients, hormones, respiratory gases and urea occurs between the foetal and maternal circulation.

Question 15: Mention three functions of placenta.

Answer: (i) It connects the foetus with the uterus of mother.
(ii) It helps in the exchange of nutrients, gases and waste products between mother and the foetus.
(iii) It acts as an endocrine gland and secretes chorionic gonadotrophin hormone which maintains the pregnancy.

Question 16: The circulatory system of the foetus and that of the mother are never connected directly. What are the advantages ?

Answer: The separate circulatory system facilitates quick diffusion of nutrients, metabolic waste and respiratory gases between the foetus and the mother. Bacteria and other pathogens cannot pass from the mother to the foetus because they are filtered out by the placenta. Blood pressure changes in the maternal circulation also cannot affect the foetus which has delicate blood vessels.

Question 17: What changes occur at the time of birth ?

Answer: A cycle of uterine contractions followed by labour pains, dilation of cervix and the vagina slowly pushes the foetus out of the uterus. The uterine contractions are initiated by decreased progesterone secretion and the secretion of oxytocin hormone by the pituitary gland. After the child delivery, the placenta is expelled out.

Question 18: Describe briefly the ways how a mammalian embryo is—(i) protected (ii) nourished and (iii) how it respires.

Answer: (i) The mammalian embryo is protected by two sacs:
(a) The chorion
(b) The amnion, which contains the amniotic fluid to protect the embryo from shocks. The embryo-is also protected by the thick, muscular wall of the uterus.
(ii) The mammalian embryo is nourished by the nutrients which diffuse through the placenta of the mother to pass through the umbilical cord to the embryo.
(iii) The mammalian embryo respires by the diffusion of oxygen through the placenta to enter the blood stream of the embryo. The waste carbon dioxide passes through the umbilical cord and leaves through the placenta.

Question 19: What do you understand by inguinal hernia ?

Answer: Inguinal Hernia: Sometimes due to pressure in the abdomen, the intestine bulges into the scrotum through inguinal canal and causes the most common type of hernia.

Question 20: What do you mean by identical and fraternal twins ?

Answer: Identical Twins (Produced from one egg): Sometimes a single fertilized egg may get split and separated into two parts during its early stages of cell division. Each of these

two split parts then behaves like an independent egg and produces one complete individual each. These are called Identical twins.
Fraternal Twins: Sometimes, two eggs are released from ovaries at a time and both may get fertilized to produce two individuals. These are called fraternal twins.

Give Reasons

Question 1: Gametes have an haploid (n) number of chromosomes.

Answer: The gametes take part in fertilization and after fertilization from the zygote in which the number of chromosomes is doubled. Hence, to maintain a constant number of chromosomes in a species, the gametes have haploid number of chromosomes.

Question 2: Urethra is also called urinogenital duct.

Answer: Since the urethra carries both urine and semen.

Question 3: At the time of birth, the testes descend into the scrotal sacs.

Answer: In human beings (mammals) the temperature required for the production and survival of sperms is lower than that of the body temperature. Hence, to provide a suitable temperature about 2 – 3°C lower than that of body temperature, the testes descend into the scrotal sec at the time of birth.

Question 4: Missing of menses is the first indication of pregnancy.

Answer: Because the endometrium of uterus along with the unfertilized egg is given out in the form of menstrual flow.

Question 5: The chances of pregnancy to occur are most favourable on or about the 14th day of the menstrual cycle. Explain.

Answer: The chances of pregnancy to occur are most favourable on or about the 14th day of the menstrual cycle because ovulation occurs on the 14th day and the egg so released remains viable for one to two days.

Question 6: Millions of sperms are produced at ejaculation yet one sperm actually fertilizes the ovum. Explain.

Answer: Only one ovum is released at a time in the human female during ovulation. Although millions of sperms are ejaculated only one sperm is enough to fertilize the single ovum. This arrangement is to control and maintain the growth rate of human population. The ovum secretes a protective wall that prevents entry of other sperms.

Question 7: A large number of sperms are required for fertilizing one egg.

Answer: The ovum does not exert any distant chemical attraction over the sperms. Hence to ensure that sperm reach every part of the female reproductive tract so that at least one sperm becomes available to ovum for its fertilization, large number of sperms are required.

Question 8: The acrosome of sperm secretes an enzyme called hyaluronidase at the time of fertilization.

Answer: This enzyme dissolved the membranous covering of the ovum to facilitate the entry of sperm into the ovum.

Question 9: The oviduct funnel is lined with cilia.

Answer: The ovum is non-motile and inactive female gamete and is released into the abdominal cavity. So, to pick up and push the ovum into the uterus the oviduct funnel is lined with cilia.

Question 10: Most often only one embryo is formed at a time although there are two ovaries in women. Explain.

Answer: One ovum under the influence of hormones is released alternatively every month.

Question 11: The full grown human embryo respires but does not breathe.

Answer: The full grown human embryo respires because the dissolved oxygen in the mother's blood diffuses into the embryo and is used in the oxidation of glucose in the cells with the liberation of energy. However there are no breathing movements as the lungs lie collapsed in the embryo and only function after the foetus is expelled from the mother's body. Therefore no breathing movements in the embryo as it receives oxygen by diffusion of gases.

Differentiate

Question 1: External fertilization and Internal fertilization.

Answer:

External fertilization	Internal fertilization
It occurs outside the body of the animal through a medium such as water.	It occurs inside the body of the female.

Question 2: Amnion and Chorion.

Answer:

Amnion	Chorion
It is the innermost foetal membrane which secretes amniotic fluid.	It is the outer membrane which forms placenta with endometrium and allantois. It does not secrete amniotic fluid.

Question 3: Uterus and Urethra.

Answer:

Uterus	Urethra
It is a sac that holds, nourishes and protects the foetus.	It is a tubular passage for the exit of sperms and urine in mammals.

Question 4: Urinogenital system and Urinary system.

Answer:

Urinogenital System	Urinary System .
It is a combined system of excretory and reproductive functions.	It is an excretory system.

Question 5: Foetus and Embryo.

Answer:

Foetus	Embryo
It is an unborn infant after two months of intra-uterine life till birth.	It is an unborn infant during the first two months of intra-uterine life.

Question 6: Isogametes and Heterogametes.

Answer:

Isogametes	Heterogametes
These are similar in shape and size and unite to form a zygospore in conjugation.	These are dissimilar male and female gametes which produce zygote in fertilization.

Question 7: Urinogenital duct and Ureter.

Answer:

Urinogenital Duct	Ureter
It carries both gametes and urine.	It carries only urine.

Question 8: Tubectomy and Vasectomy.

Answer:

Tubectomy	Vasectomy
It is the tying up of oviducts with nylon thread to close the passage of egg towards uterus.	It is the surgical removal of a small bit from each Vas deferens (sperm duct) between two ligatures. Thus, the sperms cannot travel down.

Question 9: Structure of the sperm and the structure of the Ovum.

Answer:

Sperm	Ovum
Sperm is motile, consisting of head, neck, middle piece,and tail. It is haploid.	Ovum is rounded, immotile and haploid structure.

Question 10: Sexual Reproduction and Asexual Reproduction.

Answer:

Sexual Reproduction	Asexual Reproduction
It involves the gametes.	No gamete formation.
Two individuals are needed.	One individual involves in this reproduction.

Question 11: Graffian follicle and Corpus luteum.

Answer:

Graffian Follicle	Corpus Luteum
It is a fully developed ovarian follicle containing ovum.	It is a yellow mass formed after the release of an egg from the Graffian follicle which acts as an endocrine gland.