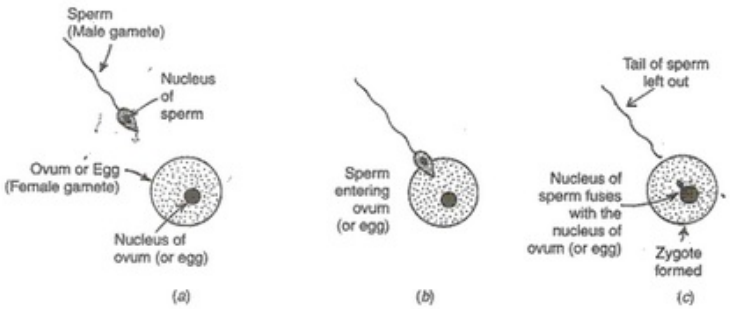
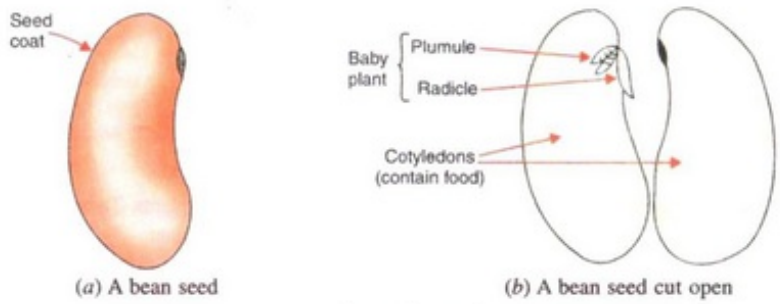
Solution 31
(a) In males, the gonads are testes. The function of testes is to make sex cells called sperms and to make sex hormone called testosterone. In females, the gonads are ovaries. The function of the ovaries is to make mature female sex cell called ova or egg and also to make female sex hormones called oestrogen and progesterone.
(b) Advantages of sexual reproduction over asexual reproduction:
(i) Sexual reproduction combines DNA from two individuals (male and female) due to which the offspring has lot of variations. On the other hand, in asexual reproduction, only the DNA of one individual is copied due to which the variations in the offspring are extremely small.
(ii) Due to lot of variations, sexual reproduction allows species to change to more advanced forms from one generation to the next and speed up evolution whereas asexual reproduction does not allow a species to change much from one generation to the next and hence, evolution becomes very slow.
Solution 32
The sexual reproduction in animals takes place in the following steps:
(i) The male parent produces male gamete called sperms. The sperm is a small cell with a long tail (flagellum) for movement.
(ii) The female parent produces female gamete called ova which is much bigger cell than the sperm, having a lot of cytoplasm.
(iii) The sperm enters into the ovum and fuses with it to form a new cell called zygote and this process is called fertilisation.
(iv) The zygote then divides again and again to form a large number of cells and ultimately the zygote grows and develops to form a baby.



Fertilisation of an ovum (or egg) by a sperm to form a zygote.

Solution 33
(a) Since the ovary of female release one egg every month, therefore, the uterus also prepares every month to receive a fertilised egg. The inner lining of the uterus becomes soft and thick with lots of blood capillaries in it. This preparation is necessary as in case the egg is fertilised by the sperm, it helps to keep the egg and nourish it. If however, the egg is not fertilised, then the thick lining of the uterus is not required and the uterus lining breaks down and comes out through the vagina in the form of blood and mucous. This is called menstruation.
(b) Menstruation cycle in females:
(i) When a girl reaches puberty at the age of 10 - 12 years, the sex

hormones released it her blood cause some of the ova in the ovaries to become mature.
(ii) Usually one mature egg is released from the ovary into the oviduct once every 28 days. This is called ovulation.
(iii) Before ovulation, the inner lining of the uterus becomes thick and spongy, and full of blood capillaries, and prepares itself to receive the fertilised egg.
(iv) If the ovum does not get fertilised, then the thick and soft inner lining of the uterus is no longer needed and hence it breaks and the dead ovum comes out from vagina in the form of bleeding called menstruation.
(v) Menstruation usually occurs 14 days after ovulation and usually lasts for 3 to 5 days.
(vi) After menstruation is over, the inner lining of the uterus starts building up again so that it becomes ready to receive the next ovum in case it gets fertilised.
(vii) If the ovum does not get fertilised even now, then the menstruation takes place again and this cycle goes on repeating.
Solution 34
(a) The sexual reproduction in plants takes place in the following steps:
(i) The male organ of flower called 'stamen' makes the male gametes of the flower. These male gametes are present in pollen grains.
(ii) The female organ of a flower called 'carpel' makes the female gametes present in the ovules and are called ova or egg.
(iii) The male gametes present in the pollen grains fertilises the female gametes or egg cells present in the ovules.
(iv) The fertilised egg cells grow within ovules and become seeds.
(v) The seeds produce new plants on germination.
(b) Sexual reproduction: Wheat plant and sunflower plant; Asexual reproduction: Ferns and mosses.
Solution 35
(a) Flowering plants.
(b) A seed is the reproductive unit of a plant (which can be used to grow a new plant). Plumule, radical and cotyledon are the parts of seed.



(a) A bean seed
(b) A bean seed cut open
Parts of a seed

Solution 36
(a) The age at which the sex hormones begin to be produced and the boy and girl become sexually mature (able to reproduce) is called puberty. Females attain puberty at an age of 10-12 years.
(b) (i) The function of testes is to make sex cells called sperms and to make sex hormone called testosterone.
(ii) The function of the ovaries is to make mature female sex cell called ova or egg and also to make female sex hormones called oestrogen and progesterone.
Solution 37
(a) The time period from the fertilisation up to the birth of a baby is called gestation. The average gestation period in humans is about 9 months (about 38 weeks).
(b) Condoms.
(c) AIDS has no cure. Its causative organism is HIV (human Immunodeficiency Virus).

Solution 38
(a) Barrier method - Condom.
(b) Chemical method - Oral pills.
(c) Surgical method - Vasectomy.
Solution 39
(a) Vasectomy.
(b) Tubectomy.
(c) Condom.
(d) Diaphragm.
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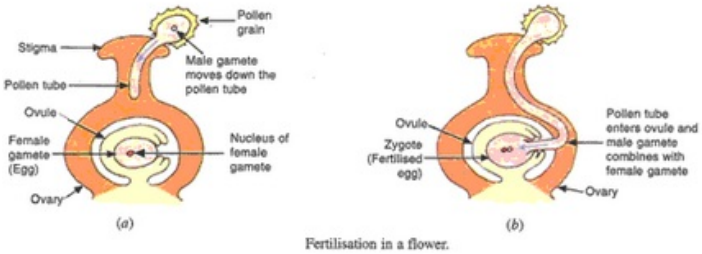
Solution 40
(a) (i) Vasectomy
(ii) Tubectomy.
(b) (i) Condom
(ii) Diaphragm.
Solution 41
(a) The prevention of pregnancy in women (by preventing fertilisation) is called contraception. There are 3 methods of contraception:
(i) Barrier method
(ii) Chemical method
(iii) Surgical method.
(b) (i) Vasectomy - In males, a small portion of the sperm duct (Vasdeferens) is removed by surgical operation and both the cut ends are ligated properly. This prevents the sperms from coming out.
(ii) Tubectomy - In females, a small portion of the oviducts is removed by surgical operation and the cut ends are ligated. This prevents the ovum from entering into the oviducts.
(c) No.
Solution 42
(a) The diseases which are spread by sexual contact with an infected person are called Sexually Transmitted Diseases. Example: Aids, Syphilis.
(b) IUCD (Copper - T).
Solution 43
(a) (i) The oral pills contain hormones which stop the ovaries from releasing ovum into the oviduct. (ii) The vaginal pills contain the chemicals called spermicides which kill the sperm.
(b) Copper- T is effective in preventing pregnancy. It is placed inside the uterus and it prevents the flow of sperms in the uterus.
(c) AIDS.
Solution 44
(a) (i) Vasectomy
(ii) Tubectomy.
(b) (i) Cotyledons
(ii) Radicle
(iii) Plumule.
Solution 45
The offsprings and parents of organisms reproducing sexually have same number of chromosomes due to reduction division (meiosis) during gamete formation which reduces the number of chromosomes into half in both male and female gametes. During fertilisation when male and female gametes fuse the original numbers of chromosomes as in parents is restored in the offspring.
Solution 46
(a) 24.
(b) 48.
Solution 47
(a) 1:2.
(b) Gamete
Gamete represents the sex cell or germ cell in sexual reproduction and it is of two types: Male gametes (Sperm) and Female gamete (Eee).
Zygote

It is the product of fertilization in which a male and a female gamete fuse with each other.
Solution 48
(a) Fertilisation in humans can occur only once in a month because ovulation takes place once every month i.e. an egg is released once every month by ovary.
(b) (i) Uterus.
(ii) Vagina.
Solution 49
A - Oviduct (Fallopian tube);
B - Ovary;
C - Uterus (Womb);
D - Vagina.
(a) Part D - (Vagina).
(b) Part B - (Ovary).
(c) Part A - Oviduct.
(d) Part C - Uterus.
Solution 50
The testes are situated in the scrotal sac outside the main body cavity because the formation of sperms requires a lower temperature than the normal body temperature. Its disadvantage of being outside the main body cavity is that it is more prone to injury.
Solution 51
(a) Ovaries in female; Both make gametes.
(b) Oviducts in females; Both transport gametes.
(c) Vagina in female; Both are copulatory organs.
Solution 52
AIDS damages the body's immune system so that the body becomes weak and cannot protect itself against infection thus the virus does not kill the humans directly.
Solution 53
(a) Placenta.
(b) About 9 months.
(c) Cervix.
Solution 54
(a) The flowers which contain only one sex organ, either stamens or carpels are called unisexual flowers like Papaya and watermelon plants. The flowers which contain both the sex organs i.e. both the stamen and the carpel are called bisexual flowers like Hibiscus and Mustard plant.
(b) The transfer of pollen grains from the anther of a stamen to the stigma of a carpel is called pollination. It takes place when pollen grains are carried from the anther to the stigma of the flower. (c) When a pollen grain falls on the stigma of the carpel, it bursts open and grows into a pollen tube downwards through the style towards the female gamete in the ovary. A male gamete moves down the pollen tube and enters the ovule in the ovary. The tip of the pollen tube bursts open and male gamete comes out of the pollen tube which combines with the nucleus of the female gamete present in the ovule to form a fertilised egg called zygote.



Fertilisation in a flower.

(d) The fertilised egg divides several times to form an embryo within the ovule which develops a tough coat around it and is gradually converted into a seed. The ovary of the flower develops and becomes a fruit with seeds inside it.

Solution 55
(a)

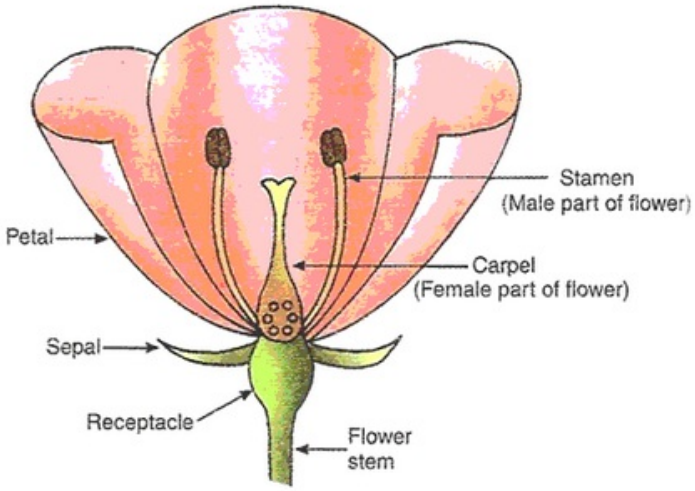


Diagram to show the parts of a flower.

(b) (i) Corolla
(ii) Calyx.
(c) (i) Stamen is the male reproductive organ of the plant.
(ii) Carpel is the female reproductive organ of the plant.
(d) Pistil.
(e) Pollen grains.

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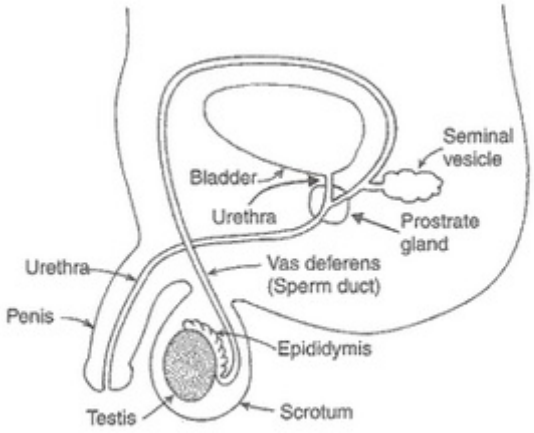
Solution 56
(a) The changes observed in boys during puberty are: Hair grows under armpits, pubic region between the thighs, chest and face. Body becomes more muscular due to the development of muscles. The voice deepens. Chest and shoulder broaden. The penis and testes become larger. Feelings and sexual drives associated with adulthood begin to develop.
(b) Testes.
(c) Working of human male reproductive system: The human male reproductive system consists of:
(i) Testes - Are the primary reproductive organs in males which are in pair. These are oval shaped organs which lie outside the abdominal cavity. It makes the male sex cells called sperms and produces male sex hormones called testosterone.
(ii) Scrotum - Is a muscular pouch which houses the testes. It is present outside the abdominal cavity and maintains a lower temperature than the normal body temperature.
(iii) Epididymis - The sperms formed in the testes goes into a coiled tube called epididymis which stores the sperms temporarily.
(iv) Vas Deferens (sperm duct) - It is a long tube which carries the sperms from epididymis to another tube called urethra.
(v) Seminal vesicles and prostrate gland - Both these glands are present along the path of vas deferens and add their secretions to sperms which allows them to transport easily.
(vi) Penis - It is an organ which pass?s the sperms from the man's body into the vagina in the women's body during mating.
(d) The secretions of seminal vesicles and prostrate gland provide nutrition to the sperms and also make their transportation easier by secreting a thick liquid.



The male reproductive system in humans (side view).

Solution 57

(a) The changes observed in girls during puberty are: Hair grows under armpits and pubic region. Mammary glands develop and breasts become enlarged. The hips broaden and extra fat is deposited in various parts of the body like hips and thighs. Fallopian tubes, uterus and vagina enlarge. Ovaries start to release eggs and menstruation starts. Feelings and sexual drives associated with adulthood begin to develop.

(b) Ovaries.

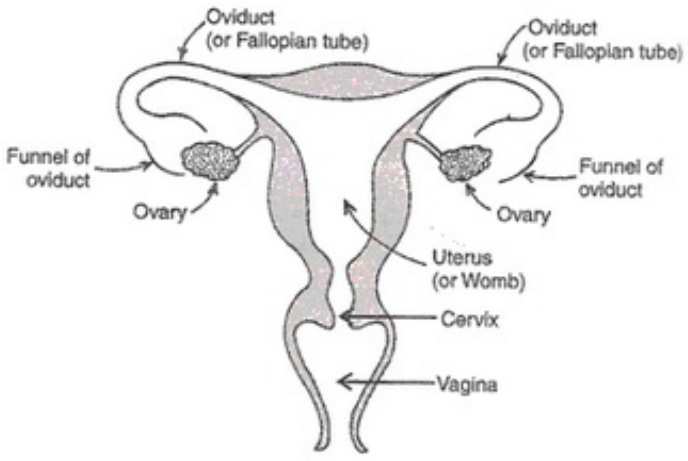
(c) Working of human female reproductive system: The human female reproductive system consists of:

(i) Ovaries - These are the primary reproductive organs in women. They are oval shaped organs which are inside the abdominal cavity of a woman near the kidneys and produces mature female sex cells called ova or eggs. They also produce female sex hormones called Oestrogen and Progesterone. Each ovary is composed of several thousand follicles which mature to form ripe eggs at puberty.

(b) Oviduct - These are paired tubes which have funnel shaped openings that cover the ovaries. The ovum released by an ovary goes into the oviduct through its funnel shaped opening. The fertilisation of egg by a sperm takes place in it. It is also known as fallopian tube.

(c) Uterus - It is a bag like organ in which the fertilised egg develops into a baby. It is connected through a narrow opening called cervix to another tube called vagina. It is commonly called womb.

(d) Vagina - It is a tubular structure. It receives the penis for putting sperms into the women's body. It is also called birth canal because it is the passage through which the baby is born.



The female reproductive system in humans (front view).

Solution 58

(a) The release of an ovum from an ovary is called ovulation. In human females, the ovaries start releasing ovum once every 28 days from the age of puberty.
(b) Oviducts.
(c) Fertilisation is possible if mating takes place during the middle of menstrual cycle because in a normal healthy girl the ovulation takes place on the 14th day of the beginning of menstrual cycle of 28 days.
(d) The embedding of embryo in the thick lining of the uterus is called implantation.
(e) Placenta - Placenta is a disc like special tissue which develops between the uterus wall and the embryo after implantation. Its function is the exchange of nutrients, oxygen and waste products between the embryo and the mother.
(f) Umbilical cord.

********** END **********