

Reproduction in Humans

REVIEW QUESTION

Multiple Choice Questions:

1. Put a tick mark (✓) against the correct alternative in the following statements:

(a) The testes are located within the:

1. Penis
2. **Scrotum**
3. Ureter
4. Urinary bladder

(b) Amoeba is most commonly reproduced by:

1. Budding
2. Regeneration
3. **Binary fission**
4. Multiple fission

(c) Identify the stage which is formed after the fertilisation of the egg by the sperm?

1. Ovule
2. Foetus
3. Embryo
4. **Zygote**

(d) Internally, the uterus opens into:

1. Urethra
2. **Vagina**
3. Oviduct
4. Vulva

(e) Which one of the following represents the correct sequence in the life history of a butterfly ?

1. Egg → Larva → Adult → Pupa
2. Egg → Pupa → Adult → Larva
3. **Egg → Larva → Pupa → Adult**
4. Egg → Pupa → Larva → Adult

Short Answer Questions:

Question 1.

Distinguish between the following pair of terms:

- (a) Egg and sperm.
- (b) Sexual reproduction and asexual reproduction.
- (c) Budding and Regeneration.

Answer:

(a) Egg and sperm

Egg Sperm

- 1. Egg is produced in the ovaries.
- 2. Egg is spherical in shape with a nucleus.

Sperm

- 1. Sperm is produced in the testes.
- 2. Sperm has head with nucleus, middle piece and tail.

(b) Sexual reproduction and asexual reproduction.

Sexual reproduction

- 1. In sexual reproduction the two sexes i.e., male and female produce special type of reproductive cells sperms in the male and eggs in the female.
- 2. To produce a new individual the sperm has to reach the ovum and fuse with it.
e.g. Humans, bird, reptile, etc.

Asexual reproduction:

- 1. It involves the production of an offspring from a single parent without the fusion of reproductive cells (gametes).
- 2. It is a rapid mode of multiplication, e.g. Lower plants and animals {Amoeba}.

(c) Budding and Regeneration

Budding: Budding is a process in which buds grow on the outside of the parent body. The buds detach themselves when they are large enough.

Example: Hydra

Regeneration: Regeneration is the process that uses cell division to regrow lost body parts.

Example: Starfish, sponges

Question 2.

Define the following terms:

- (a) Fertilization
- (b) Implantation
- (c) Puberty

Answer:

(a) Fertilization: When sperms and eggs from the opposite partners (males and females) fuse to form Zygote. It is called fertilization.

(b) Implantation: The fertilised egg (zygote) soon starts developing and by the time it reaches the uterus, a small ball of numerous cells is already formed. This is a kind of embryo which forms a pit in the wall of the uterus and gets fixed in it. This natural way of fixing of the embryo in the wall of the uterus is called implantation. This produces the state of pregnancy.

(c) Puberty: Puberty is the period during which the reproductive systems of boys and girls mature. In girls, it starts at the age of about ten and the first sign of puberty is the development of breasts. In boys, it starts at about 11 years of age of the enlargement of the testes is its first sign. Sudden spurt in growth, shoulder girdle grows more than hip girdle.

Question 3.

State the reason why testes lie outside the abdomen in a scrotum?

Answer:

Both the testes remain in the scrotum because normal body temperature are too high, scrotum has smooth muscle tissues that keeps the testes at a cooler temperature than the body temperature 2°C to 3°C lower than the body temperature which is the most suitable temperature for sperm production.

Question 4.

Why is it important that a very large number of sperms should be present in the semen?

Answer:

Single ejaculation of semen has 20,000,000 to 40,000,000 sperms. But only 1 or 2 sperms go into oviduct and fertilise the egg to form the Zygote. It forms embryo that forms an individual. It is the sperm in the semen that are of importance, and therefore semen quality involves both sperm quantity and quality.

Question 5.

List the structures, in their correct sequence, through which the sperms must pass from the time they are produced in the testes to the time they leave the urethra.

Answer:

Sperms are produced in testes. They pass as follows:

The testes consist of a mass of sperm producing tube. The tubes join to form ducts leading to the epididymis which in turn leads into a muscular sperm duct. The two sperm ducts, one from each testes, open at the top of the urethra.

Question 6.

State the functions of the following:

- (a) Ovary
- (b) Testes
- (c) Fallopian tubes
- (d) Seminal vesicle
- (e) Uterus

Answer:

(a) Ovary: Ovaries produce ova (eggs) and secrete female sex hormones, oestrogen and progesterone.

(b) Testes: A pair of testes are present in human male. The testes produce sperms.

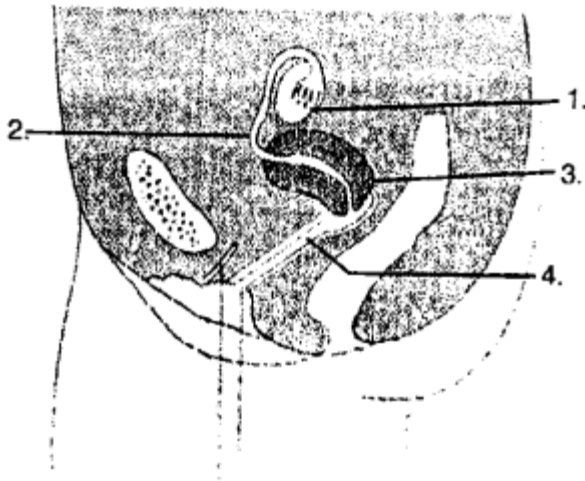
(c) Fallopian tubes: There are two fallopian tubes in the human female reproductive system. Fertilization occurs in the fallopian tube. It also conveys fertilized egg to the uterus.

(d) Seminal vesicle: The function of seminal vesicle is to store sperms and to secrete seminal fluid.

(e) Uterus: The inner lining receives, protects and nourishes embryo. Contractions of muscular wall expel baby during birth.

Question 7.

Given here is a section of the female reproductive system of human beings.



(a) Name the parts labelled 1 to 4

(b) Name the part where fertilisation occurs in human beings.

Answer:

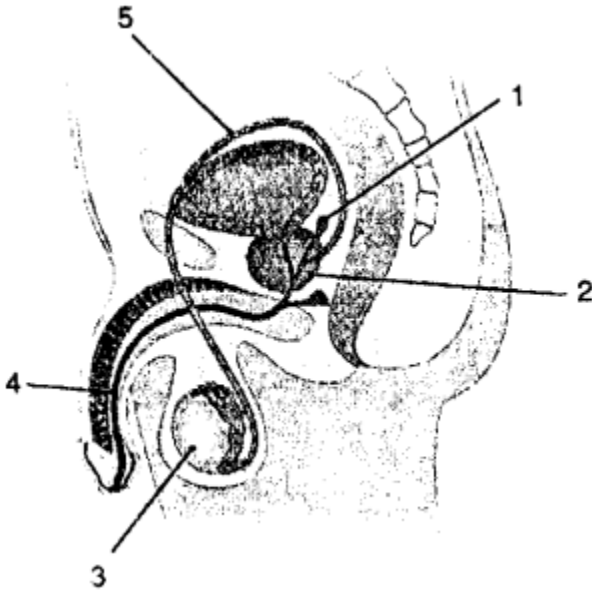
(a)

- 1. Ovary
- 2. Fallopian tube (Oviduct)
- 3. Uterus (Inner lining or Muscular wall)
- 4. Vagina

(b) Fertilisation occurs in the upper part of the oviduct. Sperm fuses with the egg and zygote is formed this is called fertilisation.

Question 8.

Given alongside is a diagram of male reproductive system in humans. Label the parts indicated by numbers 1 to 5, and state their functions.



Answer:

1. **Seminal vesicle:** The seminal vesicles produce a secretion which serves as a medium for the transportation of the sperms.
2. **Prostate gland:** Prostate gland which pours an alkaline secretion into the semen as it passes through the urethra.
3. **Testes:** Sperms are produced in the testes.
4. **Urethra:** Urethra passes through the penis and carries either urine or semen.
5. **Sperm duct:** The sperm pass through the sperm ducts.

Long Answer Questions:

Question PQ.

Define the term metamorphosis. Briefly describe the various stages occurring in the life-cycle of a butterfly.

Answer:

Metamorphosis: A change in the form and often habits of an animal during normal development after embryonic stage complete transformation from an immature form to an adult form in two or more distinct stages.

Life cycle of butterfly: The butterfly lays its eggs on the leaves of the plants. The new born that comes out of the egg is called larva. It passes through various stages of

development. The larva of butterfly is also called Caterpillar. It is very active. It is very voracious. It feeds and moves actively and gains size.

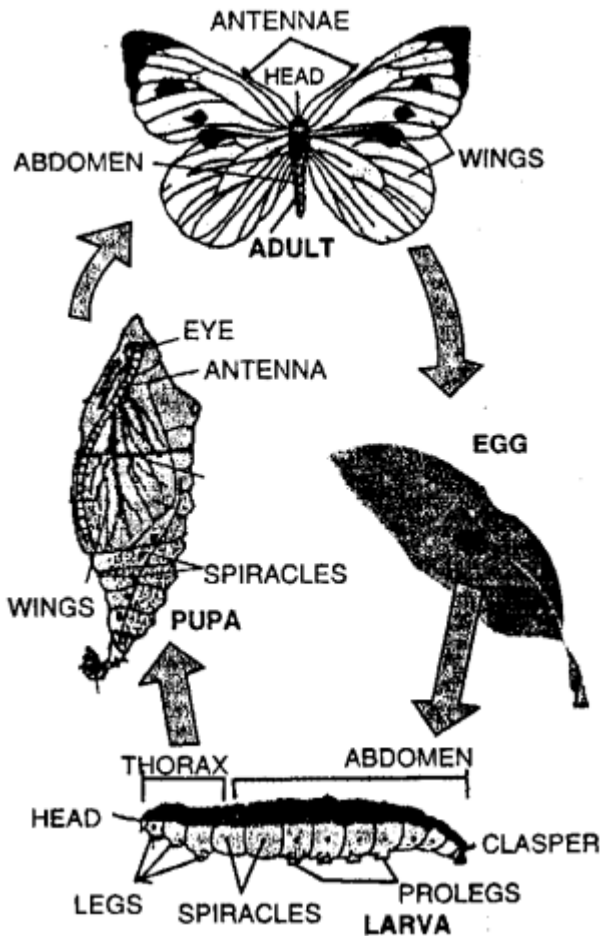


Fig. Life cycle of butterfly

It stops moving and eating and it is called pupa. It is a resting stage. The pupa spins thread around itself and thus is enclosed in a covering. It is called cocoon. This cocoon covers the pupa and is protective in function. During this stage it forms the features of an adult. After attaining adulthood the pupa comes out of the cocoon after breaking it as an adult butterfly. The wings of emerged butterfly are wrinkled and soft. After an hour these are fully stretched and it starts flying.

Question PQ.

What is fertilization? Describe the process in human beings.

Answer:

Fertilization: The fusion of male (sperm) and female (ova) gamete is called fertilization.

As the male performs sexual act with the female and as a result of it the semen is deposited in the vagina of the female. Thus the semen has millions of sperms. Only a few of these sperms are able to reach the upper part of the oviduct. If there is an egg in

the oviduct it is fertilized by the sperm. As sperm enters the egg and this leads to the formation of zygote, this act is called fertilisation.

During fusion only the head part of the sperm, which has nucleus, enters the egg. The tail is left behind. The nucleus of the sperm and egg fuse and form the zygote. Soon this zygote becomes many called embryo and reaches the uterus and implants on the wall of the uterus and forms the foetus. Baby develops with in the gestation period of 280 days. After this the baby is delivered.

Question 1.

How does a single called fertilized egg grows into an adult in human beings?

Answer:

Fertilised egg i.e., zygote divides and redivides and forms a ball of cells. This is a kind of embryo and it reaches the uterus and gets attached to the wall of the uterus. This fixing of embryo to the uterus is called implantation. Now the embryo undergoes a process “specialisation of cells”. It leads to the formation of different parts of the body. This process is called differentiation. It leads to the formation of various tissues and other organs and thus organ systems are formed. Organ system lead to the formation of an individual. Thus the zygote forms an embryo, it forms a baby and it forms an adult.

Question PQ.

Tabulate the important physical changes in the boys and girls that take place during puberty.

Answer:

Reproductive system of boys and girls mature during puberty. Puberty starts at 10 in girls and at 11 in boys. Testes enlarge in boys and breasts develop in girls. The following table shows the physical changed in boys and girls that take place during puberty.

Boys

1. Testes become large
2. Scrotal sac grows and penis becomes long.
3. Length increases and shoulder girdle grows becomes more.
4. Hair grow on the chest arm pits and on the sex organs.
5. Facial hair and moustaches grow.
6. Voice becomes hoarse and deep.

Girls

1. Breasts become large.
2. Ovaries become large and these release eggs. Size of uterus and vagina grows. Menstruation cycle starts.

3. Sudden growth takes place in length. Hip girdle becomes trough shaped, it larger than the shoulder girdle.
4. Chest and abdomen do not have hair. But hair arise on the sex organs and the arm pits.
5. No moustaches and facial hair.
6. High pitch voice.

Question 2.

Describe the human female reproductive system with a labelled diagram.

Answer:

On each side of the uterus two white oval bodies lie. These are called ovaries. Eggs are produced in the ovaries. Nearer to the ovaries there lies expanded funnel shaped oviducts or fallopian tubes. The eggs go into the oviducts when released by the ovaries. The two oviducts open into the uterus. The walls of the uterus are muscular. The growing embryo lodges to the wall of the uterus. It is supplied by the food and blood through the placenta which is a connection between the growing embryo and the mother. The uterus joins the vagina. It is the vagina in which semen is lodged during sexual act. From here sperms go up into the oviduct and fertilise the egg. The urethra which brings urine from the urinary bladder opens into the vulva just in front of the vaginal opening.

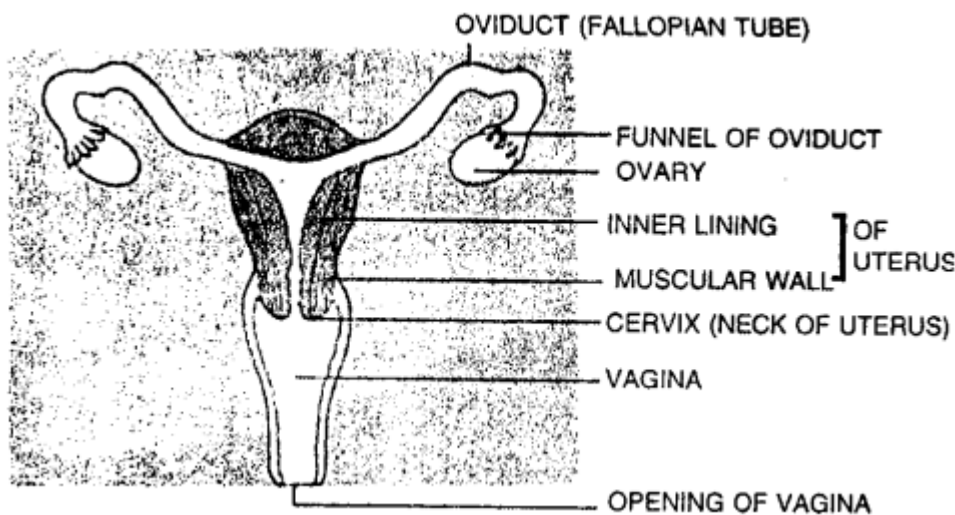


Fig. Female reproductive system

Question PQ.

'Adolescence is a crucial stage'. Justify this statement.

Answer:

During adolescence physical and emotional changes takes place in the body of boys and girls. This is period between the age of 10 to 19 and this is very critical period. Boys bear facial hair, muscular body, hair in the arm pits and on the sex organs, and have hoarse voice.

The girls also have beautiful contours, raised breasts, wide lips and high pitch voice. The body increases in length in both cases. Boys and girls becomes conscious about

the growth of the body. They become hesitant and shy to each other. They become body conscious and spend lot of time on dressing up and grooming. Hormonal level increases in their body and become restless. Hormones affect their brains and control their emotions and moods. They cherish the company of their own sexes and show the attraction for the opposite sex. Thus it is very strange and crucial stage in their life. So adolescence is a very crucial stage in the life of the boys and the girls.

ADDITIONAL QUESTIONS

I. Multiple choice questions. Tick (✓) the correct choice:

1. Testis are present in a sac called

1. **scrotum**
2. oviduct
3. epididymis
4. none of the above

2. Butterfly in its development from larva to an adult shows

1. multiplication
2. **metamorphosis**
3. fertilisation
4. none of the above

3. Which of the following glands is responsible for bringing about changes during adolescence in boys and girls?

1. **pituitary**
2. adrenal
3. thyroid
4. testis

II. Fill in the blanks:

1. Lower part of uterus is called **cervix**.
2. The sac-like structure present outside the body and which contains testes is called **scrotum**.
3. Male gametes are produced inside **testes**.
4. Development of baby (foetus) takes place inside **uterus**.
5. The time between fertilisation and birth is called **pregnancy**.

III. Find the odd one out, giving reason:

Testes, epididymis, uterus, vas deferens

Answer:

Uterus: Uterus is the odd-one out as it is an organ of the female reproductive system in humans while the rests three are organs of the male reproductive system in humans.

IV. Differentiate between the following:

Question 1.

Sperm and Ovum

Answer:

Sperm

1. It is the male gamete.
2. It is produced in the testes in humans.
3. The sperms are small in size.
4. Sperms move towards the egg.
5. Sperms have no stored food.
6. Millions of sperms are released at a time in humans.

Ovum

1. Ovum is the female gamete.
2. It is produced in the ovary.
3. It is large in size.
4. Ovum does not move much.
5. Ovum has stored food.
6. Only one ovum is released in a month in humans.

Question 2.

External fertilisation and Internal fertilisation.

Answer:

External fertilisation

1. The fusion of sperm and egg occurs outside the female body in external fertilisation.
2. It needs water or else the gametes will dry out and die.
3. Wastage of gametes is higher.
4. Mostly frogs (amphibians) and fishes shows external fertilisation.

Internal fertilisation

1. The fusion of sperm and egg occurs inside the female body in internal fertilisation.
2. It does not need water.
3. Wastage of gametes is lower.
4. Mostly reptiles mammals, birds and insects show internal fertilisation.

V. Define the following:

1. Growth
2. Development
3. Adolescence
4. Puberty
5. Metamorphosis

Answer:

1. **Growth:** Growth is the process of permanent increase in size and weight of an organism. The change in shape, volume and number of cells occur during growth. Example: baby grows into an adult, seed grows into a plant.
2. **Development:** During growth, the body undergoes an increase in the complexity of body structure. This is called development. During development, the cells undergo differentiation and take up particular functions.
3. **Adolescence:** Adolescence is the age between puberty and full maturity in humans. It signifies the age during which reproductive organs become functionally active and a young person develops from a child into an adult. It begins at an age of about 11 years and ends at about 18 years.
4. **Puberty:** Puberty is an age in humans when the reproductive organs become functionally active. Between the age of 11 and 14, the testes start to make sperms and the ovaries start to make eggs. This time of development in life is called puberty.
5. **Metamorphosis:** Metamorphosis is the process in which a series of changes occur to transform a larva (as in insects) or tadpole (as in frog) into an adult.

VI. Mention the common method of reproduction in the following organisms:

1. Amoeba
2. Hydra
3. Flatworm
4. Star fish

Answer:

1. Amoeba – Binary fission
2. Hydra – Budding
3. Flatworm – Fragmentation
4. Star Fish – Regeneration

VII. Mention the functions of the following:

1. Testis
2. Ovary
3. Uterus
4. Oviduct

Answer:

1. **Testis:** The main function of the testes is to produce sperms (the male reproductive gamete). It also acts as an endocrine gland and secretes male sex hormone called testosterone.
2. **Ovary:** The main function of the ovary is to produce eggs or ova (female reproductive gamete). It also acts as an endocrine gland and secretes female sex hormones called oestrogen and progesterone. Ovaries also regulate the menstrual cycle and pregnancy.
3. **Uterus:** Uterus is the place where the fertilised egg attaches itself and develops into a baby. Uterus is also called as the womb. Developing baby gets nutrition and oxygen through uterus.
4. **Oviduct:** Oviduct or fallopian tubes is the place through which eggs travel from ovary, meet sperms and fertilisation takes place.

VIII. Answer the following questions:

Question 1.

Which part of the human body produces

1. Sperms
2. Ova?

Answer:

1. Testes
2. Ovary.

Question 2.

Name the organ involved in the following:

1. Fertilisation of ovum by tile sperm.
2. Passing of sperms from a man to a woman.

Answer:

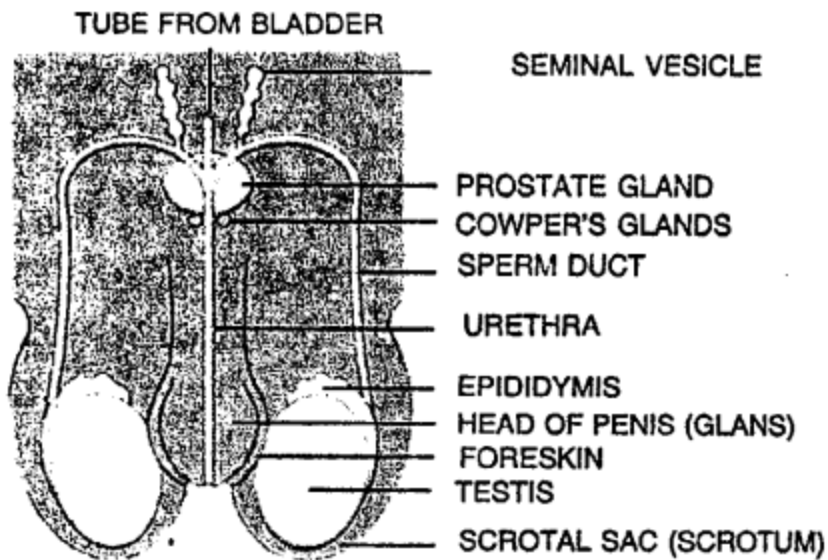
1. Oviduct or fallopian tubes.
2. Penis.

Question 3.

Describe the male and female reproductive systems in humans.

Answer:

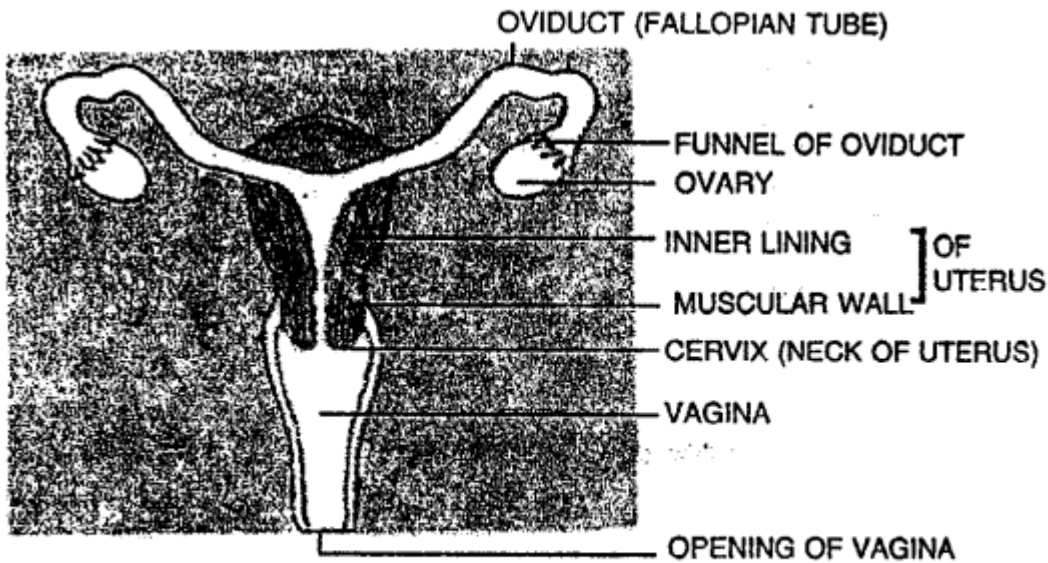
Organs of the male reproductive system in humans are:



*The reproductive system of
the human male*

1. A pair of testes present outside the body in a sac-like structure called scrotum. They produce male gametes or sperms.
2. **Epididymis:** Stores sperms.
3. **Vas deferens:** It is the sperm duct through which . sperms leave the testes and reach penis..
4. **Penis:** It is used for injecting sperms inside the female body.

Organs of the female reproductive system in humans are:



The reproductive system of the human female

1. **A pair of ovaries:** They produce eggs (ova).
2. **Oviducts or fallopian tubes:** Through these eggs travel, sperms and ovum meet here and fertilisation takes place.
3. **Uterus (womb):** Development of fertilised egg and baby occurs here. The lower part of uterus is called cervix.
4. **Vagina:** Cervix is connected to the muscular tube-like vagina. The sperms enter the uterus through the vagina.

Question 4.

What happens in a boy's body under the influence of hormones?

Answer:

Under the influence of hormones, reproductive organs become functional and the following changes take place in a boy during the age of 14 and 16:

1. Voice becomes deeper.
2. Growth of hair on face and other body parts take place.
3. Muscles start developing.
4. Onset of acne.

Question 5.

What happens in a girl's body under the influence of hormones?

Answer:

Under the influence of hormones, reproductive organs become functional and the following changes take place in a girl during the age of 11-12 years:

1. Development of breasts.
2. Development of hips.
3. Voice becomes high pitched.
4. Onset of menstruation.

Question 6.

Mention the changes which occur during adolescence in humans.

Answer:

The two main types of hormones – sex hormones and growth hormones – influence adolescent age in humans. The adolescent period shows rapid changes – physical, emotional, cognitive and social. Sex hormones in this age make the sex organs active and child reaches puberty. Many physical changes in girls like breast development, growth of body hair, onset of menstruation, growth spurs and in boys like growth of body hair, growth spurs, change in voice, muscle development etc. occur. Adolescence is also a very emotional time for teenagers. Hormones bring about mood changes and increased sexual urges. Teenagers become self-conscious in social circles.

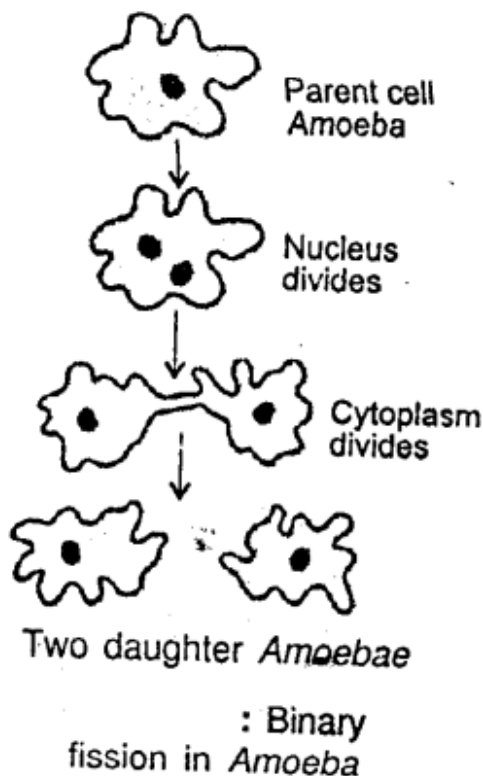
Question 7.

Describe the different methods of asexual reproduction in animals.

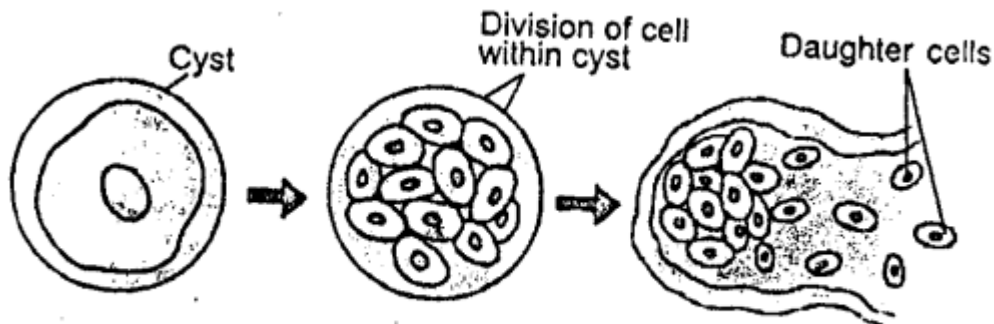
Answer:

The different methods of asexual reproductive in animals are:

1. **Binary fission:** Common in unicellular organisms like Amoeba and Paramecium. Parent cell divides into two halves which grow into new organisms.

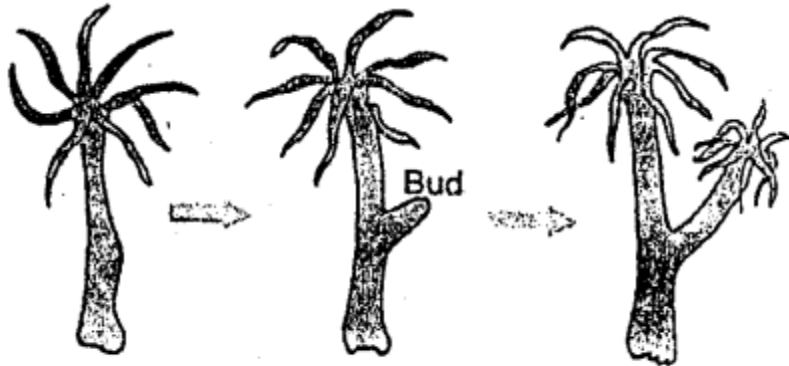


2. **Multiple fission:** This reproduction takes place in unfavourable conditions. Example in *Plasmodium*, it develops a thick coat called cyst. Nucleus divides into many nuclei which form spores or daughter cells. Under favourable conditions, these grow into new individuals.



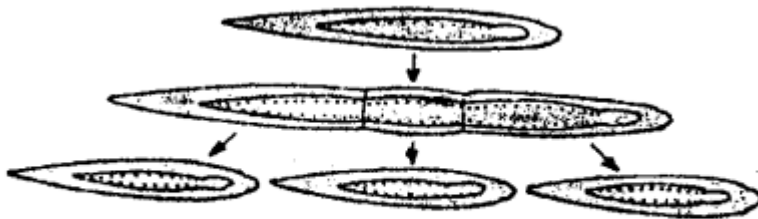
Multiple fission in *Plasmodium*

3. **Budding:** An outgrowth called bud arises on the parent body and detaches to form a new organism. Example: *Hydra*.



Budding in *Hydra*

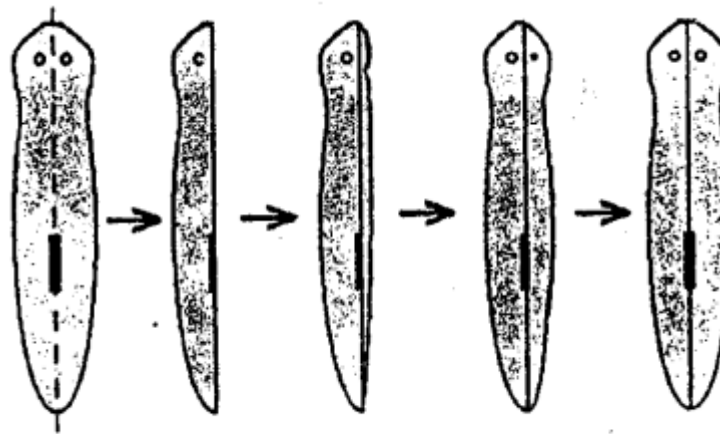
4. **Fragmentation:** Sponges and flatworms show this type of reproduction. Parent body divides into fragments and each fragment grows into new individuals.



Fragmentation in a flatworm

5. **Regeneration:** Animals can repair themselves or grow lost parts again. Example: Broken tail of lizard grows back again. Starfish can grow into a new animal from its broken arm. It is more prominent in simple animals. Complex organisms like

mammals cannot regenerate whole parts like arm. Nails, hair, skin cells etc., are



Regeneration in *Planaria*

regenerated.

Question 8.

Adolescence is considered a critical stage in the life of boys and girls. Explain this statement.

Answer:

Adolescence is considered a critical stage in the life of boys and girls as the sex hormones and growth hormones bring about rapid changes in them and the reproductive organs become functionally active which bring about certain changes in girls like:

1. development of breasts,
2. development of hips,
3. high pitch voice,

onset of menstruation and in boys like:

1. deep voice,
2. growth of facial and public hair,
3. growth spurs,
4. acne outburst take place.

Adolescence is the stage of life when boys and girls reach puberty and they need to adjust sexually. Adolescence can be an emotional time which brings along mood changes, increased sexual urges and desire to the independent. Children might become rebels and undergo psychological problems.

Question 9.

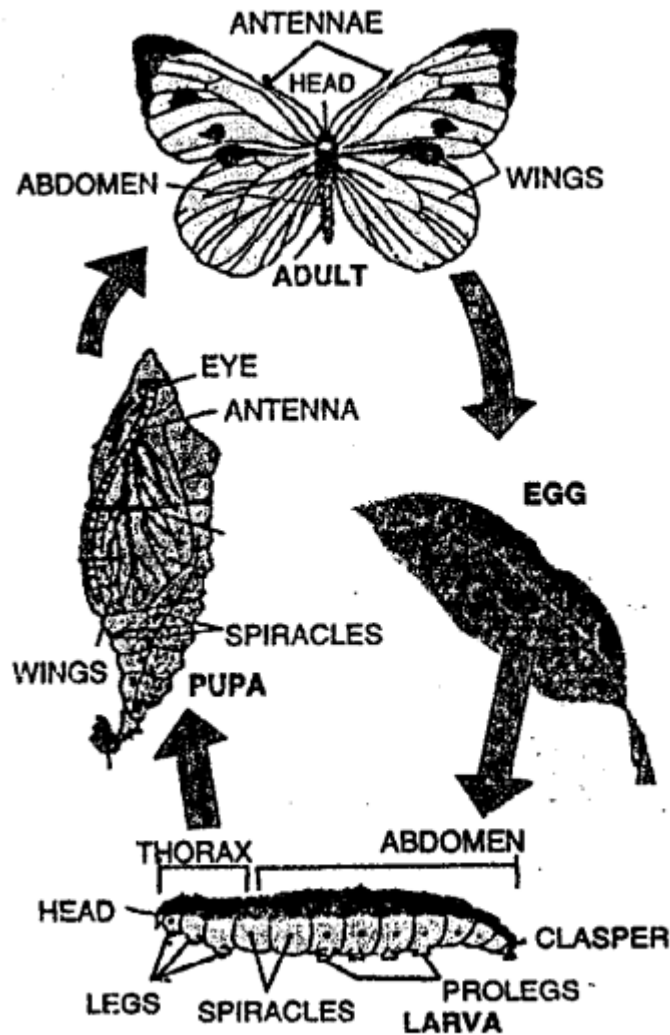
Describe the various stages in the life cycle of a butterfly.

Answer:

The life cycle of a butterfly starts with the laying of eggs. The eggs hatch into very active

larva called caterpillar which changes into pupa and finally an adult butterfly.
Metamorphosis in butterfly, thus, involves four stages-egg, larva, pupa and adult.

Egg → Larva → Pupa → Adult



Life-cycle of a butterfly