

Chapter 9 Exercise Questions**1. Explain the importance of reproduction in organisms.**

Soln:

The importance of reproduction in organisms is as follows:

- Reproduction is termed to be a biological process in which organisms give birth to their offspring.
- It helps in maintaining the continuity of a particular race and in increasing the population of the species.
- Reproduction is meant for the survival of all living things.

2. Describe the process of fertilisation in human beings.

Soln:

- Fertilisation is defined as the process in which there is a fusion of male gamete and female gamete.
- The male gametes or sperms are released from the male reproductive organ called the penis.
- The sperms release and enter the female body through the vagina.
- From the vagina, sperms travel through the fallopian tubes, where they meet the eggs.
- From there on, the process of fertilisation takes place in the fallopian tube.
- The male gamete cell (sperm) and female gamete cell (egg) fuse together to form a zygote.
- The zygote divides rapidly to form a group of cells called a morula, which becomes the embryo after approximately five days. The foetus is present for about eight weeks after fertilisation.

3. Choose the most appropriate answer.

(a) Internal fertilisation occurs

(i) in the female body

(ii) outside the female body

(iii) in the male body

(iv) outside male body

(b) A tadpole develops into an adult frog by the process of

(i) fertilisation

(ii) metamorphosis

(iii) embedding

(iv) budding

(c) The number of nuclei present in a zygote is

(i) none

(ii) one

(iii) two

(iv) four

Soln:

- a) (i) in the female body
- b) (ii) metamorphosis
- c) (iii) two

4. Indicate whether the following statements are True (T) or False (F).

- (a) Oviparous animals give birth to young ones. ()
- (b) Each sperm is a single cell. ()
- (c) External fertilisation takes place in the frog. ()
- (d) A new human individual develops from a cell called a gamete. ()
- (e) Egg laid after fertilisation is made up of a single cell. ()
- (f) Amoeba reproduces by budding. ()
- (g) Fertilisation is necessary even in asexual reproduction. ()
- (h) Binary fission is a method of asexual reproduction. ()
- (i) A zygote is formed as a result of fertilisation. ()
- (j) An embryo is made up of a single cell. ()

Soln:

- a) False
- b) True
- c) True
- d) False
- e) True
- f) False
- g) False
- h) True
- i) True
- j) False

5. Give the differences between a zygote and a foetus.

Soln:

Zygote:

- It is the earliest stage of development
- It is formed by the fusion of male and female gametes
- It is a single cell
- The zygote divides several times to form an embryo
- The zygote normally lasts a week and then develops into its next stage.

Foetus

- It is the last developmental stage of an organism
- The stage of the embryo shows all the main recognisable body parts of a mature organism.
- The foetus stage occurs after the embryo stage
- Foetus mainly undergoes internal development

6. Define asexual reproduction. Describe two methods of asexual reproduction in animals.

Soln:

In this type of reproduction, the offspring arises from a single organism without the fusion of male and female gametes. It never changes the number of chromosomes.

Binary fission in amoeba

- It is a kind of asexual reproduction in which one cell divides into two halves.
- It is a unicellular organism that has a cell membrane, cell wall and cytoplasm.
- The division of the cell can take place on any plane.
- In this process, the nucleus of the amoeba first divides to form two daughter nuclei by the process called Karyokinesis.
- Finally, the division of the body into two halves having a nucleus takes place.

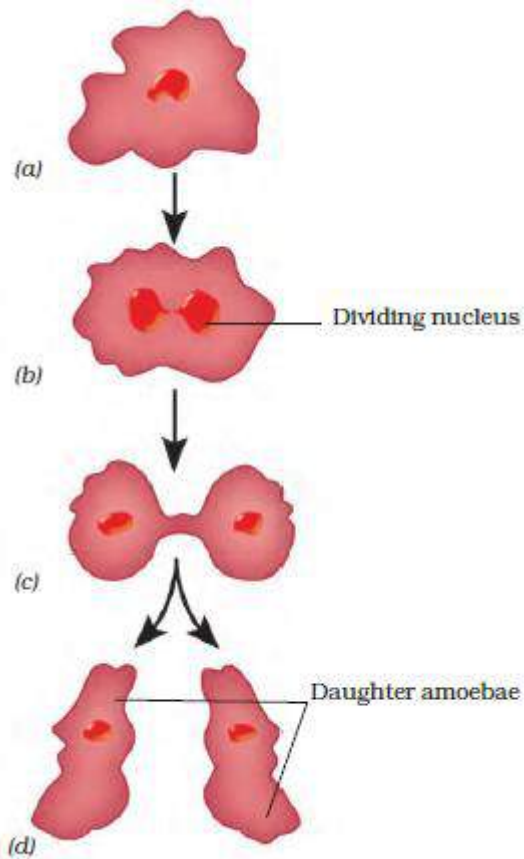


Fig. 9.12 : Binary fission in Amoeba

Budding in hydra

- Organisms, such as hydra, use regenerative cells for reproduction in the process of budding.
- The first step is the formation of buds, which develops as a small outgrowth on the parent's body.
- As the bud enlarges, it receives the characteristics of the parent organism.
- Once it is developed, it may be detached from the parent body and develop into a new individual.
- In some rare cases, the buds may not be detached, forming interconnected buds.
- There are also methods like fragmentation, multiple fission etc.

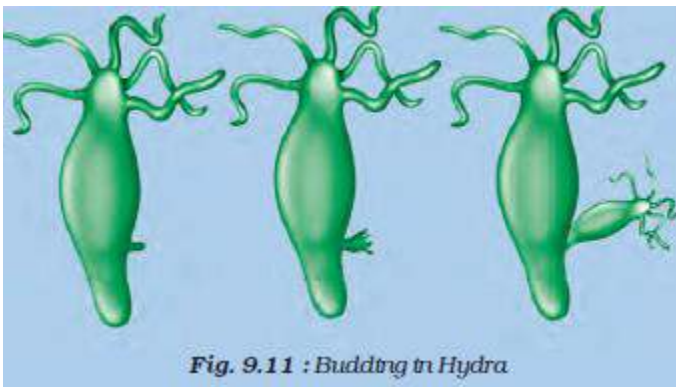


Fig. 9.11 : Budding in Hydra

7. In which female reproductive organ does the embryo get embedded?

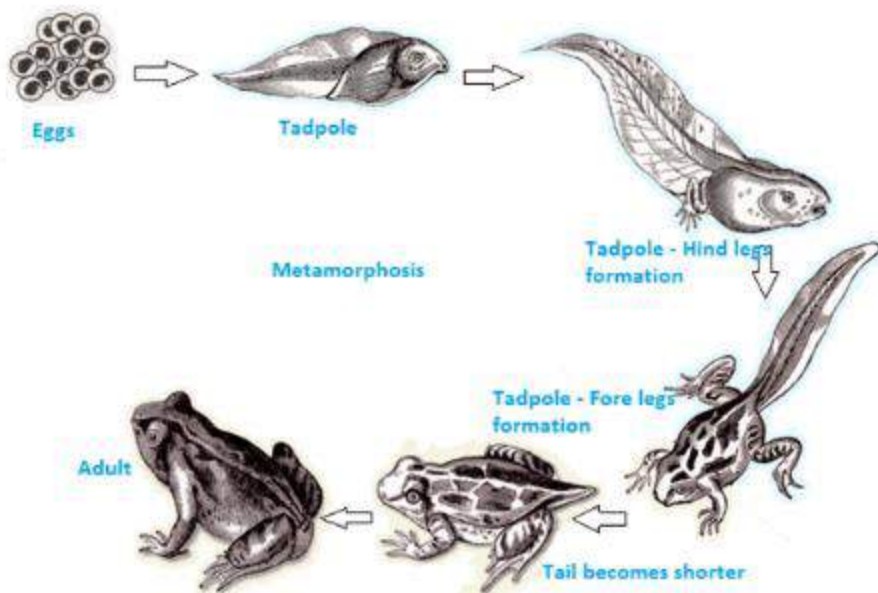
Soln:

- In the female reproductive organ, the embryo gets attached to the uterus.
- Once it gets attached, there occurs the formation of body parts like legs, hands, eyes etc.
- The embryo is then called a foetus.

8. What is metamorphosis? Give examples.

Soln:

- It is defined as the process in which an animal's body structure abruptly changes through cell growth and differentiation.
- It is a biological process.
- Examples of this kind are frogs and insects.



The life cycle of a frog:

The tadpole emerging from the egg will have gills, tail, etc.

They can swim easily in water.

It undergoes abrupt changes and develops into a mature frog.

9. Differentiate between internal fertilisation and external fertilisation.

Soln:

Fertilisation, in general, is defined as the fusion of a male and a female gamete.

Internal fertilisation

It occurs inside the female body.

There are high chances of survival of the offspring.

Internal fertilisation protects the fertilised egg or embryo from harsh environments.

Examples are a cow, human, dog, monkey, etc.

External fertilisation

It occurs outside the female body.

There are low chances of survival of the offspring.

Most aquatic animals use this type of fertilisation, and the advantage of external fertilisation is that it produces a large number of offspring due to external hazards.

Examples are fish, frog, organisms etc.

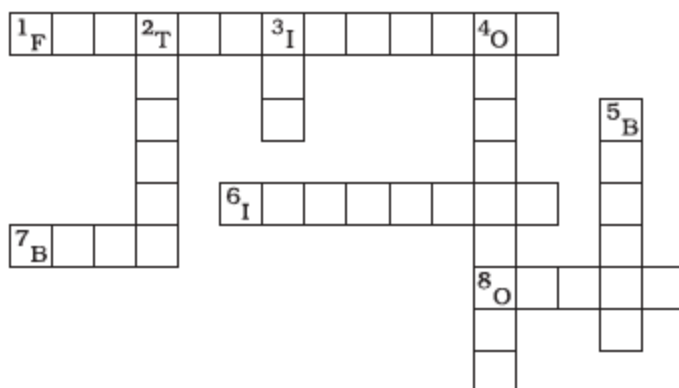
10. Complete the crossword puzzle using the hints given below.

Across

1. The process of the fusion of the gametes.
6. The type of fertilisation in a hen.
7. The term used for bulges observed on the sides of the body of a hydra.
8. Eggs are produced here.

Down

2. Sperms are produced in these male reproductive organs.
3. Another term for in vitro fertilisation.
4. These animals lay eggs.
5. A type of fission in amoeba



Soln:

Across

- 1) Fertilization
- 6) Internal
- 7) Buds
- 8) Ovary

Down

- 2) Testis
- 3) Zygote
- 4) Oviparous
- 5) Binary

