THE SCHRAM ACADEMY
Chennai

CLASS & SECTION: XII **SUBJECT: BIOLOGY**

CHAPTER 1 - REPRODUCTION IN ANIMALS : CHAPTER NOTES

REPRODUCTION:

Reproduction is a biological process of formation of new off springs from the pre-existing organism.

- Reproduction becomes a vital process without which species cannot survive for long
- It ensures continuity of species generation after generations as older individuals undergo senescence and ultimately, they die.

Life span:

The period from birth to the natural death of an organism represents its life span.

- Life span of organisms varies from few days (Butterfly-1to 2 weeks) to thousands of years (Banyan tree).

Types of Reproduction:

Based on whether there is one or two organisms taking part in the process of reproduction

- ASEXUAL REPRODUCTION
- SEXUAL REPRODUCTION

- When the offspring is produced by single parents with or without the involvement of gamete formation, the reproduction is called asexual reproduction.
- When two parents (opposite sex) participates in reproduction process and also involves the fusion of male and female gametes, it is called sexual reproduction.

Asexual Reproduction:

1. Usually followed by organisms with relatively simpler organizations.
2. Off springs produced by single parent.
3. With/without involvement of gamete formation.
4. Off springs produced are genetically and morphologically similar to each other and to the parent, i.e. they are clones.

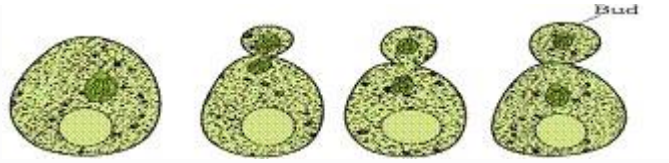
• In Protista and Monera, the parent cells divide into two to give rise to new individuals. Thus, in these organism's cell division is the mode of reproduction itself.

Binary fission:

In this method of asexual reproduction, a cell divides into two halves and rapidly grows into an adult. Ex- amoeba, paramecium.

Budding:

Small buds are produced that remain attached initially with parents and get separated on maturation. Ex. Yeast.



• Fungi and simple plants like algae reproduce through special reproductive structures like zoospores (motile structure), conidia (penicillium), buds (hydra) and gemmules (sponges).

Regeneration and fragmentation:

- Regeneration is the process of growing back the lost organ or body part by the organism. Eg. Lizard
- Fragmentation is the process by which an organism gets fragmented into smaller pieces and each piece grows into a whole new organism. E.g. Planaria, Hydra.

Advantages of Asexual Reproduction:

- Is carried out by a single individual, hence does not require to find a mate.
- The process is faster compared to sexual reproduction.
- Less energy is invested comparatively.
- The whole process is less complicated as it involves only a single individual.
- It can take place in varied environments.

Very Short Answer Type Questions

1. Offsprings produced by asexual reproduction are referred to as clones. Why?

Ans. Because offsprings produced by Asexual reproduction is morphologically and genetically identical to parent.

2. Name the most invasive aquatic plant weed which is called as Terror of Bengal.

Ans. Water hyacinth (Eicchornia)

3. How does Zygote usually differ from Zoospore in terms of ploidy?

Ans. Zygote diploid, zoospore haploid.

4. Mention the main difference between the offspring produced by asexual reproduction and progeny produced by sexual reproduction.

Ans. Offspring produced by asexual reproduction are genetically similar while progeny produced by sexual reproduction exhibit genetic variation.

5. Which characteristic property of Bryophyllum is exploited by gardeners and farmers?

Ans. Adventitious bud arising from margin of the leaf.

6. What represents the life span of an organism?

Ans. The period from the birth to the natural death of an organism represents its life span.

7. Which individuals can be termed as clones?

Ans. The individuals who are morphologically and genetically identical are called clones.

8. How do the following organisms reproduce: Paramoecium and Penicillium?

Ans. a) Paramoecium reproduces by the process of binary fission.

b) Penicillium reproduces with the help of asexual structures called conidia.

9. State the function of a vegetative propagule.

Ans. The vegetative propagules are the asexual vegetative structures of the plant that are capable of giving rise to a new plant.

10. How will you grow a banana and a ginger plant?

Ans. The rhizomes of a banana and a ginger are used to propagate new plantlets.

Frequently Asked Questions on Reproduction in Organisms

1. What are the two inherent characteristics of amoeba and yeast that favour asexual reproduction in them?
A.1. The two inherent properties of amoeba that help them to reproduce asexually are:

- They have relatively simple structures and can divide very quickly.
- They are uniparental.

Q2. “The offsprings produced by asexual reproduction are referred to as clones”. Why?

A.2. During asexual reproduction, there is no fusion of gametes and a single parent divides and redivides to produce the offsprings. Hence, the offsprings are morphologically and genetically similar to the parents and therefore referred to as clones.

Q.3. Why is potato tuber considered as a stem though it is an underground part? Give two reasons in support of your answer?
A.3. The potato is referred to as a stem because:

- It has nodes and internodes.
- It can form plantlets from the buds present over the nodes.

Q.4. Among the annual and the perennial plants, which one has a shorter juvenile period. Explain.
A.4. The entire life cycle of an annual plant has to be completed in one year which is shorter than that of the perennial plants. Hence, it has a shorter juvenile period.

Q.5. Rearrange the following events in the sequence in which they occur in the sexual reproduction of flowering plants: embryogenesis, fertilization, gametogenesis, pollination.

A.5. Pollination, Gametogenesis, Fertilization, Embryogenesis.

Q.6. How is it that the chances of fruit set in a self-pollinated bisexual flower of a plant are far greater than a dioecious plant?
A.6. In a bisexual flower, the anther and stigma lie close to each other. Thus, the transfer of pollen to stigma is easier than dioecious plants.

However, in a dioecious plant, a pollinator is necessary to carry out pollination. Therefore, the chances of fruit set in a self-pollinated bisexual flower are far greater than a dioecious plant.

Q.7. Is sexual reproduction hindered by the presence of a large number of chromosomes in an organism?
A.7. No, Sexual reproduction is not hindered by a large number of chromosomes in an organism. A fern Ophioglossum has 1260 chromosome and still reproduces sexually. The chromosomes are present within the nucleus of a cell. The chromosomes divide and segregate in this compartment irrespective of its number. It generates haploid gametes during sexual reproduction.

Q.8. Explain giving two examples if there is a relationship between the size and the lifespan of an organism.
A.8. There is no relationship between the size and lifespan of an organism. For eg.,

- The size of a crow and a parrot is the same but a crow can live for 15 years while a parrot, 140 years.
- The mango tree and the banyan tree have the same size but the lifespan of a mango tree is shorter than that of the banyan tree.

Q.9. Why can’t multicellular organisms reproduce by cell division?
A.9. cell division takes place in the body of a multicellular organism but it does not aid in reproduction. Every day millions of cells die and are replaced by others. Multicellular organisms have well-developed reproductive organs that carry out the reproduction process.

Q.10. Which mode of reproduction is better: asexual or sexual? Why?

A.10.

Sexual reproduction is better than asexual reproduction because it produces offsprings that are genetically unique from the parents. It also means that the offspring will be more resilient and be able to survive better than either parent due to genetic variation.