**11th May, 2020 JESUS AND MARY SCHOOL AND COLLEGE MODULE 1**

## **CLASS- XII**

### **BIOLOGY**

### **REPRODUCTION IN ORGANISMS**

**Topics**

1. Life span of the organisms
2. Meaning and type of reproduction in organisms – Asexual and Sexual reproduction
3. Modes of Asexual reproduction
4. Vegetative propagation in plants

**EXPLANATION OF THE POINTS**

Every organism can live for a certain period of time and the period from birth to the natural death of an organism is called **life span.** Approximate life spans of some organisms are-

1. Tortoise- 150 to 200 years
2. Banyan Tree- 250 to 300 years
3. Cow- 15 years etc

**REPRODUCTION**

It is a process that results in the formation of new individuals of the same kind . It is for the continuity of the species , generation to generation . Therefore ,there is a cycle of birth, growth and death.

Among organisms there are two types of reproduction:

* Asexual Reproduction
* Sexual Reproduction

**ASEXUAL REPRODUCTION**

This is uniparental . In this a single organism is capable of producing its own kind and the individuals produced are genetically identical. It takes place mostly in lower organisms such as protozoans , sponges etc . It is of many types – Fission , Budding, Fragmentation , Spore formation , Regeneration , Gemmule formation etc.

1. **Fission-**In this the body of the organism after attaining a certain size simply divides into two or more parts , each having a part of the nucleus and is able to grow into a new individual. It is of two type –(a) Binary Fission, in which two individuals are formed from a single parent . Example- In amoeba it is irregular , In paramecium it is transverse while in euglena it is longitudinal . (b) Multiple Fission , in this the parent body divides into many daughter organisms . In unfavorable conditions amoeba reproduces by multiple fission . It secretes many layered protective cyst around it and becomes inactive . The nucleus divides again and again to form several daughter nuclei . When the favorable condition comes the cyst breaks and the young amoebulae come out and form new amoeba . This is also known as sporulation.
2. **Budding-**It is most common method of reproduction like in yeast , hydra etc. In hydra a small structure appears in the body by repeated multiplication of the epidermal cells. The wall of this outgrowth is called bud. The bud grows in size and gets detached from the parent body and forms new individual.
3. **Fragmentation-**It takes place mostly in algae and fungi. When the filament of the algae or a small fragment of hypha of a fungi break then every filament or fragment are able to develop into a new individual.
4. **Spore Formation-** In some plants like algae , fungi the spore formation takes place. These spores perform new individuals .
5. **Regeneration-** This type of reproduction takes place mostly in hydra , starfish and planaria etc. They regain the lost body parts. It is called regeneration. Example- If hydra is cut transversely into two or more parts , each part will develop the lost body part .
6. **Gemmule Formation-**Some sponges reproduce asexually by the formation of internal buds called gemmule formation. Each gemmule looks like a small hard ball and has a small opening at one end. In favourable conditions the gemmules germinate and give new sponge.

**VEGETATIVE PROPAGATION IN PLANTS**

The regenration of new plants from a part of the vegetative organ(plant parts) is called vegetative propagation. It is of two types- (a) Natural vegetative propagation (b) Artificial vegetative propagation

* **Natural Vegetative Propagation**- It this a portion of the plant body is detached from the mother plant and grow into new plant under suitable conditions. Stems, roots and leaves are responsible for this.
1. By underground stems- Many flowering plants are modified into various forms. These are rhizome, tuber, bulb and corn.

Rhizomes are thick prostrate underground stems which grow horizontally in the soil surface. Eg- Ginger.

Tubers are developed by accumulation of food material. They have nodes in the form of eyes. From these eyes new plant arise. Eg- Potato

Bulb is short and thickened. Eg- Onion.

Corn grows vertically down into the soil. It has many buds which grow to form new plants. Eg- Colocasia

1. **Sub Arial Stems-** These are runner, offset, sucker, and stolon.

Runner is prostrate that creeps horizontally on the surface of the soil. Eg- Doob grass.

Offset is a short thick and slender condensed runner that originates in the axial of leaves. The branch breaks off and develop into a daughter plant. Eg- Water Hyacinth.

Sucker grow horizontally below the surface of the soil but soon grows obliquely upward forming a leafy shoot. Suckers are separated from the main plant and give new plant. Eg- Mint.

Stolon are like runner but at first it grows obliquely upward and then it bends down to the ground. Eg- Strawberry

1. **Roots-** Some woody plants propagate to produce new plant by their roots. Eg- Sweet potato
2. **Leaves-** In *Bryophyllum* the buds produced on the margin of the leaves to grow new plants.
3. **Bulbils-** In some plants, some flowers are modified into small structures called bulbils. They fall on the ground and grow into new plants. Eg-In *Globba bulbifera* .

**ARTIFICIAL VEGETATIVE PROPAGATION**

It is done for quick production of new plants. A plant portion is taken from the body of the parent plant and is then grown independently. It is done by cutting, layering and grafting.

**ADVANTAGE OF VEGETATIVE PROPAGATION**

It is a rapid easier and less expensive method of multiplying plants. It makes possible the propagation of plants like banana, seedless grapes etc. Plants produced through this process are the exact genetic copies of the parent showing the same characters. In this way such a population of genetically identical plants derived from an individual is called a clone.

**DISADVANTAGE**

There are no variations and there is no dispersal of propagules so it causes over crowding.

**WORKSHEET-1**

**EXERCISES**

**Short question answers**

1. How do fungi reproduce asexually?
2. Name the organism where cell division in itself is a mode of reproduction?
3. What is life span ? Give the life spans of 2 organisms?
4. What is reproduction? What are the various kinds of asexual reproduction?
5. What is the main character of asexual reproduction?
6. Describe in brief about gemmule formation in sponges?
7. In which type of reproduction the sex organs are not involved? Define that type of reproduction?
8. Write short note on multiple fission?
9. Name the two animals which can regenerate their lost parts?
10. What is sporulation?
11. Describe the vegetative propagation from underground stems?
12. Give the short note on bulbils?
13. How the offset and suckers perform vegetative propagation?
14. Give the advantage and disadvantage of vegetative propagation?

**FILL IN THE BLANKS**

1. In spongilla reproduction takes place by \_\_\_\_\_\_.
2. The small fragment of a fungus is called\_\_\_\_\_\_\_.
3. \_\_\_\_\_\_\_\_\_ enables the continuity of the species.
4. The spores maybe motile or \_\_\_\_\_\_\_\_\_.
5. Gametes are not formed in \_\_\_\_\_\_\_\_\_\_ reproduction.
6. The time from birth to natural death of an organism represent its \_\_\_\_\_\_\_\_\_\_.
7. The \_\_\_\_\_\_\_\_\_ type of binary fission takes place in amoeba.
8. Only \_\_\_\_\_\_\_\_ cell division takes place in asexual reproduction.
9. The protective chitinous layer around amoeba in unfavorable condition is called\_\_\_\_\_.
10. In asexual reproduction the individuals produced are \_\_\_\_\_\_\_\_\_\_ identical.
11. In \_\_\_\_\_\_\_ foliar buds produced.
12. \_\_\_\_\_\_ are prostate underground stems which grow horizontally in the soil surface.

**NOTE-**

Please do all this work in your old copy which will be checked when school reopens. Please consider this important.

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