



INDIAN SCHOOL AL WADI AL KABIR

Class: X	DEPARTMENT OF SCIENCE 2020 – 2021 SUBJECT : BIOLOGY	Date of completion: 12.05.2020
Worksheet No: PART I WITH ANSWERS	Topic: HOW DO ORGANISMS REPRODUCE? (Asexual Reproduction in Single Organisms)	A4 FILE FORMAT (PORTFOLIO)
CLASS & SEC:	NAME OF THE STUDENT:	ROLL NO.

I OBJECTIVE TYPE QUESTIONS

1. A feature of reproduction that is common to Amoeba, Yeast and Spirogyra is that:

- (a) they reproduce asexually
- (b) they reproduce by layering
- (c) they reproduce only sexually
- (d) they are all multicellular

2. The asexual reproduction in the Spirogyra involves:

- (a) Breaking up of filaments into smaller bits
- (b) Division of a cell into many cells
- (c) Division of a cell into two cells
- (d) Formation of a large number of buds

3. Vegetatively propagated plants

- (a) do not bear roots
- (b) do not bear buds
- (c) are genetically similar
- (d) are genetically dissimilar

4. Bryophyllum can be vegetatively propagated by

- (a) Stem
- (b) Leaf
- (c) Flower
- (d) Root

5. The process of the division of cell into several cells during reproduction in Plasmodium is termed as:

- (a) Fragmentation
- (b) Budding
- (c) Multiple fission
- (d) Binary fission

6. In a potato, vegetative propagation takes place by:

- (a) Stem tuber
- (b) Leaf
- (c) Grafting
- (d) Root tuber

7. Plants like banana, rose, jasmine, orange have lost the capacity to produce

- (a) Buds
- (b) Seeds
- (c) Flower
- (d) Roots

8. Select two plants raised by the method of natural vegetative propagation from the plants given below:

Wheat, banana, tomato, jasmine, gram, rose

9. The production of new plant from the roots, stem or leaves is called

10. The process reproduction involving only one cell or parent is called.....

Assertion & Reasoning

A) If both, Assertion and Reason are true and the Reason is the correct explanation of the Assertion.

B) If both, Assertion and Reason are true but Reason is not a correct explanation of the Assertion.

C) If Assertion is true but the Reason is false.

D) If both, Assertion and Reason are false.

11. **Assertion:** In multi-cellular organisms with relatively simple body organisation, simple reproductive methods can still work.

Reasoning: The reason is that many multi-cellular organisms, as we have seen, are not simply a random collection of cells.

Ans. B

12. **Assertion:** The spores are covered by thick walls.

Reasoning: They protect them until they come into contact with another moist surface and can begin to grow.

Ans. A

II. VERY SHORT ANSWER TYPE QUESTIONS CARRYING 1 MARK EACH

13. What is the basic difference between asexual and sexual reproduction?

Ans. Asexual reproduction does not involve gametes whereas sexual reproduction involves gametes.

14. What is the most common type of asexual reproduction in Amoeba/unicellular organisms?

Ans. Binary Fission

15. What happens if a Planaria is cut into two or three pieces?

Ans. Each piece will regenerate into new Planaria.

16. Name the structure where spores are produced?

Ans. Sporangium

17. Why regeneration is not considered a general method of reproduction?

Ans. Regeneration is not the same as reproduction. This is because most organisms would **not** normally depend on being cut up to be able to reproduce.

III. SHORT ANSWER TYPE QUESTIONS CARRYING 3 MARKS EACH

18. (i) What are the two main types of reproduction in living organisms?

(ii) Classify the following under these two types:

Amoeba, Earthworm, Yeast, Frog.

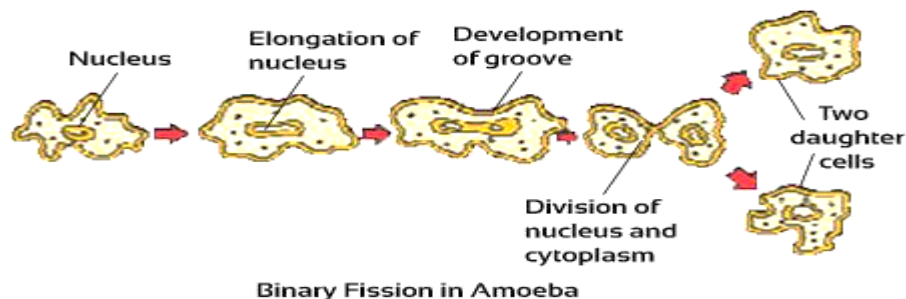
Ans. (i) The two main types of reproduction in living organisms are asexual reproduction and sexual reproduction.

(ii) Amoeba and Yeast – Asexual reproduction

Earthworm and Earthworm – sexual reproduction.

19. Diagrammatically, show binary fission taking place in Amoeba.

Ans.



20. What is vegetative propagation? List any two methods of artificial vegetative propagation. Name the method used in propagating (i) Rose and (ii) Guava

Ans. Vegetative propagation is that mode of asexual reproduction in which new plants are obtained from parts of parent plant like the root, stem or leaf, without the help of any reproductive organs.

The two methods of artificial vegetative propagation are cutting and layering.

(i) Rose – Cutting

(ii) Guava – Layering

21. How is regeneration carried out in multicellular animals like Hydra?

Ans. Simple multicellular organisms like hydra reproduce by regeneration.

1. When the body of the hydra is cut into various pieces, then each piece has tendency to regenerate and form a complete hydra.
2. The regeneration from its body parts occurs through growth and development process.
3. When the body is cut into pieces, the specialised cells of cut pieces divides and make various cell types and tissues is an organised sequence referred to as development, and again regenerate the missing body part.

22. With the help of an experiment demonstrate how new plants arise from buds in vegetative propagation.

Ans. **Experiment:** -

Take a potato and observe its surface. We can see notches on its surface

- Cut the potato into small pieces such that some pieces contain a notch or bud and some do not.
- Spread some cotton on a tray and wet it. Place the potato pieces on this cotton. Note where the pieces with the buds are placed.
- Observe changes taking place in these potato pieces over the next few days. Make sure that the cotton is kept moistened.

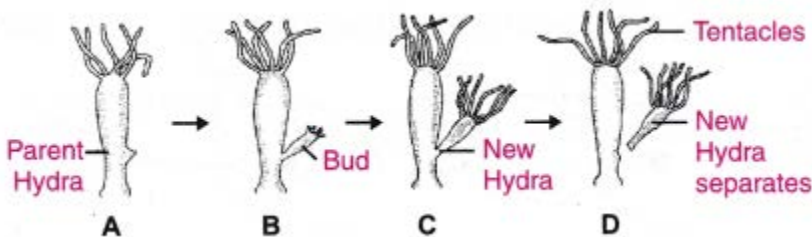
Observation – We can see that those pieces which contain a notch or bud produce new plants.

Inference – This proves that new plants arise from buds in vegetative propagation

IV. LONG ANSWER TYPE QUESTIONS CARRYING 5 MARKS EACH

23. Explain budding in hydra along with a diagram?

Ans. Hydra use regenerative cells for reproduction in the process of budding. In Hydra , a bud develops as an outgrowth due to repeated cell division at one specific site. These buds develop into tiny individuals and when fully mature, detach from the parent body and become new independent individuals.



24. Enumerate the steps in the production of new plants through micro propagation or tissue culture. What is its significance?

Ans. In tissue culture, new plants are grown by removing tissue or separating cells from the growing tip of a plant.

- i. The cells are then placed in an artificial medium where they divide rapidly to form a small group of cells or callus.
- ii. The callus is transferred to another medium containing hormones for growth and differentiation.
- iii. The plantlets are then placed in the soil so that they can grow into mature plants.

25. What is fission in relation to reproduction? Describe the different types.

Ans. Fission – It is a method of asexual reproduction, where the parent organism divides into two or more and each one grows into an adult organism.

It is of two types –

- i. Binary Fission
- ii. Multiple Fission

Binary fission - It is a type of reproduction in which the parent organism divides into two daughter organisms.

It is a type of asexual reproduction most commonly seen in prokaryotes like bacteria and some single-celled eukaryotes like protozoa like Amoeba, Leishmania.

Multiple Fission –

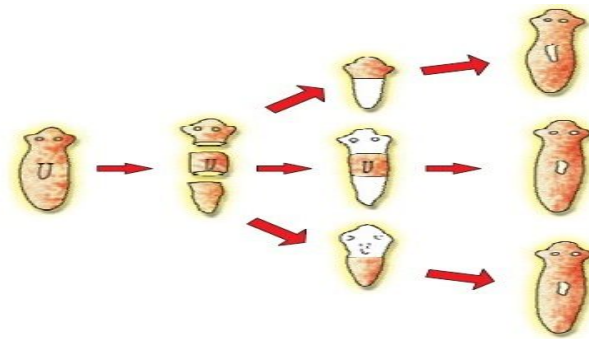
It is the process in which an organism divides to produce large number of identical daughter cells.

Plasmodium a single-celled organism, is a malarial parasite which divides into many daughter cells simultaneously by multiple fission.

26. Why are budding, fragmentation and regeneration considered as asexual types of reproduction? With the help of neat diagrams explain the process of regeneration in Planaria.

Ans. Budding, fragmentation and regeneration are considered as asexual types of reproduction because gamete formation does not happen during these modes of reproduction and a single parent carries out the process of reproduction

Regeneration in Planaria - Planaria can be cut into any number of pieces and each piece grows into a complete organism. This is known as regeneration (see Fig. 8.3). Regeneration is carried out by specialised cells.



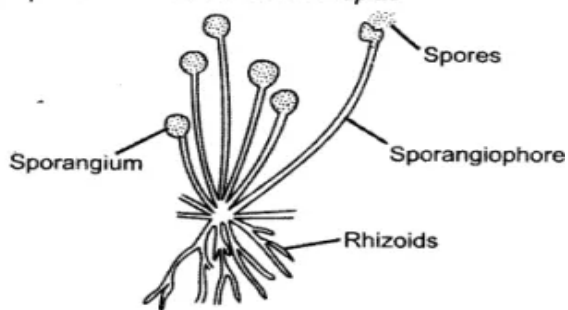
27. (i) What is spore formation?

(ii) Draw a diagram showing spore formation in Rhizopus.

(iii) List two advantages for organisms which reproduce through spores.

Ans. (i) **Spore formation** is a type of asexual reproduction found among most of the non-flowering plants and eukaryotic organisms like fungi Rhizopus

Spore formation in *Rhizopus*



Advantages of Spore Formation:

Spores give certain survival benefits to the organisms which reproduce by spores: -

- Spores can be disseminated through air and water or even through some other carriers; like animals.
- This helps an organism to spread its presence to a wider geographical area.
- Spores can also remain dormant for a long time, till favourable conditions are found.

V. BOARD BASED QUESTIONS:

28. Write one main difference between asexual and sexual mode of reproduction. Which species is likely to have comparatively better chances of survival – the one reproducing asexually or the one reproducing sexually? Give reason to justify your answer. (2019) (3marks)

Ans. Asexual reproduction does not involve the fusion of gametes and is uniparental while sexual reproduction involves the fusion of gametes and two parents are involved. The organisms reproducing sexually have better chances of survival because it promotes diversity of characters in an offspring due to combinations of genes which can lead to variation whereas in asexual reproduction evolutionary change is not possible as only **one** parent is involved therefore no variation takes place.

29. How do Plasmodium and Leishmania reproduce? Write one difference in their mode of reproduction. (2014) (2 marks)

Ans. Plasmodium reproduce by multiple fission and Leishmania reproduces by binary fission. In binary fission one parent organism divides to produce two identical daughter organisms whereas in multiple fission the nucleus divides repeatedly within the parent cell and produces large number of daughter organisms.

30. List in tabular form the two differences between asexual and sexual mode of reproduction. Name and explain with the help of labelled diagram the process by which Hydra reproduces asexually. (2014) (5 marks)

Ans.

Asexual Reproduction	Sexual Reproduction
1. It involves only single parent	1. It involves two parents (male and female)
2. It does not involve fusion of gametes	2. It involves fusion of gametes

Refer Q. No. 23 for the second part of the answer

Answer for Objective types questions 1 to 10

1(a) 2(a) 3(c) 4(b) 5(c) 6(a) 7(b) 8(Banana, Jasmine) (9 Vegetative propagation 10. Asexual Reproduction)

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CHECKED BY: HOD - SCIENCE