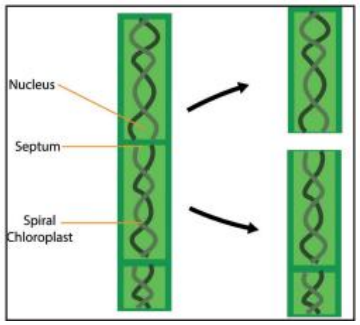
	INDIAN SCHOOL AL WADI AL KABIR	
Class: X	**DEPARTMENT OF SCIENCE -2025-26** **SUBJECT: BIOLOGY**	**DATE: 24/08/2025**
WORKSHEET NO: 5 WITH ANSWERS	**CHAPTER: HOW DO ORGANISMS REPRODUCE? – PART I (ASEXUAL REPRODUCTION)**	**A4 FILE FORMAT**
CLASS & SEC:	**NAME OF THE STUDENT:**	**ROLL NO.**

I. OBJECTIVE TYPE QUESTIONS

Ia. Multiple choice questions:

1. The rapid spread of bread mould on slices of bread are due to:

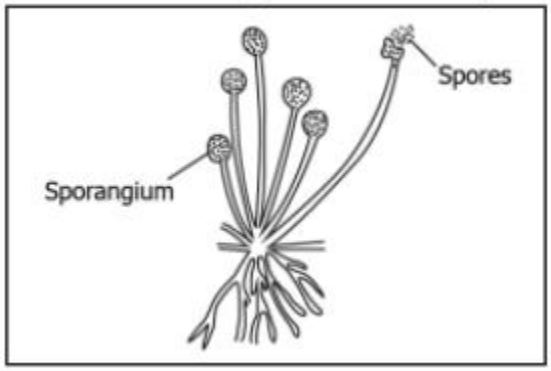
   i) Presence of large number of spores in air
   ii) Presence of large number of thread-like branched hyphae
   iii) Presence of moisture and nutrients
   iv) Formation of round shaped sporangia
   a) (i) and (iii)
   b) (ii) and (iv)
   c) (i) and (ii)
   d) (iii) and (iv)
2. Vegetative propagation refers to formation of new plants from
   a) stem, flowers and fruits
   b) stem, leaves and flowers
   c) stem, roots and flowers
   d) stem, roots and leaves
3. The image shows the division in Spirogyra.



What can be concluded about the Spirogyra from this division?

a) It is a multicellular organism gives rise to two new equal sized individuals.
b) It is a unicellular organism that gives rise to two new equal sized individuals.
c) It is a unicellular organism that breaks into pieces that grows into new individuals.
d) It is a multicellular organism that breaks into pieces that grows into new individuals.

4. The image shows the formation of spores in Rhizopus.



How spores develop into Rhizopus?
a) Spores divide and grow into new individual
b) Spores combine with other spores and grow
c) Spores enlarge in size for the growth of new individual
d) Spores land on other organisms and increase with their growth in size

5. A Planaria worm is cut horizontally in the middle into two halves P and Q such that the part P contains the whole head of the worm. Another Planaria worm is cut vertically into two halves R and S in such a way that both the cut pieces R and S contain half head each. Which of the cut pieces of the two Planaria worms could regenerate to form the complete respective worms?
a) Only P
b) Only R and S
c) P, Rand S
d) P, Q, R and S
6. An organism capable of reproducing by two asexual reproduction methods one similar to the reproduction in yeast and the other similar to the reproduction in Planaria is:
a) Spirogyra
b) Hydra
c) Bryophyllum
d) Paramecium
7. Offspring formed by asexual method of reproduction have greater similarity among themselves because.

(i) Asexual reproduction involves only one parent.
(ii) asexual reproduction does not involve gametes.
(iii)asexual reproduction occurs before sexual reproduction.
(iv)Asexual reproduction occurs after sexual reproduction.

a) (i) and (ii)
b) (i) and (iii)

c) (ii) and (iv)
d) (iii) and (iv)

8. A feature of reproduction that is common to Amoeba, Spirogyra and Yeast is that.
   a) They reproduce asexually.
   b) they are all unicellular
   c) they reproduce only sexually.
   d) they are all multicellular
9. The production of new plant from the roots, stem or leaves is called.
   a) Vegetative propagation
   b) Asexual reproduction
   c) Sexual propagation
   d) Budding
10. The process of reproduction involving only one cell or parent is called.
   a) Sexual reproduction
   b) Asexual reproduction
   c) Spore formation
   d) Zygote formation
11. The type of reproduction in malarial parasite is
   a) Fragmentation
   b) Binary fission
   c) Multiple fission
   d) Budding
12. The basis of variations in offsprings is due to the errors in
   a) Evolution
   b) Asexual reproduction
   c) DNA copying
   d) Sexual reproduction

Ib. Assertion and Reason:

For the questions 13to 14, two statements are given-one labelled Assertion (A) and the other labelled Reason(R). Select the correct answer to these questions from the options (i), (ii), (iii) and (iv)as given below:

(i) Both A and R are true and R is the correct explanation of the assertion.
(ii) Both A and R are true but R is not the correct explanation of the assertion.
(iii) A is true but R is false.
(iv) A is false but R is true.

13. **Assertion**: In multi-cellular organisms with relatively simple body organisation, simple reproductive methods can still work.
    Reason: Many multi-cellular organisms, as we have seen, are not simply a random collection of cells

14. **Assertion**: The spores are covered by thick walls.
    Reason: They protect them until they come into contact with another moist surface and can begin to grow.
15. **Assertion**: Probability of survival of an organism produced through sexual reproduction is more than that of organism produced through asexual mode.
    Reason: Variations provide advantages to individuals for survival
16. **Assertion** (A): When a bacterium divides into two, and the resultant two bacteria divide again, the four bacteria produced would be almost similar.
    Reason (R): DNA copying involves small inaccuracies in the reproduction process.

II. VERY SHORT ANSWERS TYPE QUESTIONS (2 Mark)

17. What is the basic difference between asexual and sexual reproduction?
18. What is the most common type of asexual reproduction in *Amoeba*/unicellular organisms?
19. What happens if a *Planaria* is cut into two or three pieces?
20. Name the structure where spores are produced?
21. Why is regeneration not considered a general method of reproduction?
22. Rajesh observed a patch of greenish black powdery mass on a stale piece of bread.

a) Name the organism responsible for this and its specific mode of asexual reproduction.
b) Name its vegetative and reproductive parts.

23. Colonies of yeast fail to multiply in water, but multiply in sugar solution. Give one reason for this.
24. Leaves of Bryophyllum fallen on the ground produce new plants whereas the leaves of Jasmine do not, why?
25. Define reproduction. How does it help in providing stability to the population of species?

III. SHORT ANSWER TYPE QUESTIONS (3 Marks)

26. With the help of neat, labelled diagrams explain the process of binary fission in *Amoeba.*
27. What is vegetative propagation? List any two methods of artificial vegetative propagation. Name the method used in propagating (i) Rose and (ii) Guava.
28. With the help of an experiment demonstrate how new plants arise from buds in vegetative propagation.

IV. LONG ANSWER TYPE QUESTIONS (5 Marks)

29. Explain budding in *Hydra* along with diagrams.
30. Enumerate the steps in the production of new plants through micro propagation or tissue culture. What is its significance?
31. What is fission in relation to reproduction? Describe the different types?

32. 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*.
33. (i) What is spore formation?
    (ii) Draw a diagram showing spore formation in *Rhizopus*.
    (iii) List two advantages for organisms which reproduce through spores.

V. a. PASSAGE BASED QUESTIONS:

Radhika collected some pond water which was dark green in colour in a test tube. She took out green coloured mass from it and separated its filaments by using needles. She broke some filaments into small fragments and put them in a Petri dish containing clean water. She observed that after a few days the small fragments gave rise to complete filaments.

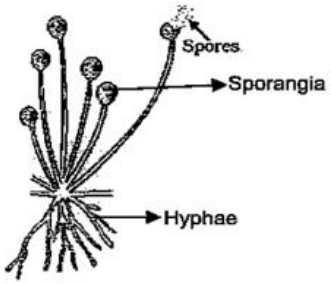
i) What do you think the mass of green filament was?
ii) The small fragment gave rise to a new filament. What does it indicate?
iii) Identify and define the mode of reproduction shown by filament.

V. b. Vegetative propagation refers to the development of new plants from vegetative parts (roots, stem or leaves) often existing plant. It is generally preferred for growing those plants which cannot produce their seeds or those which produce non-viable seeds. It is a cheaper, easier and more rapid method of propagation in plants than growing plants from their seeds.

i) What are the different modes of artificial vegetative propagation?
ii) Which type of method is used is used for growing Jasmine plant.
iii) What are the advantages of vegetative propagation?

VI. <u>BOARD BASED QUESTIONS.</u>

34. 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.
35. How do Plasmodium and Leishmania reproduce? Write one difference in their mode of reproduction.
36. 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.
37. a) Budding, fragmentation and regeneration, all are considered as asexual mode of reproduction. Why?
    b) With the help of neat diagrams, explain the process of regeneration in Planaria.
38. i) Draw a diagram showing spore formation in Rhizopus and label (a) reproductive and (b) non-reproductive parts. Why does Rhizopus not multiply on a dry slice of bread?
    ii) Name and explain the process by which reproduction takes place in Hydra.



39. i) What are spores? On which structures are they formed? How do they overcome unfavourable conditions? Name the organism which multiples with the help of these structures.
ii) Give two reasons why some plants are grown by the method of vegetative propagation. List two methods used to grow plants vegetatively.

ANSWERS

Ia. Multiple choice questions	
1.	(a) (i) and (iii)
2.	(d) stem, roots and leaves
3.	(c) It is a unicellular organism that breaks into pieces that grows into new individuals.
4.	(a) Spores divide and grow into new individual
5.	(d) P, Q, R and S
6.	b) Hydra
7.	d) (i) and (iv)
8.	(a) they reproduce asexually
9.	(a) Vegetative reproduction
10.	(b) Asexual reproduction
11.	(c) Multiple fission
12.	(c) DNA copying
Ib. Assertion and Reason	
13.	(ii)Both A and R are true but R is not the correct explanation of the assertion.
14.	(i)Both A and R are true but R is the correct explanation of the assertion.
15.	(i)Both A and R are true and R is the correct explanation of the assertion.
16.	(i)Both A and R are true and R is the correct explanation of the assertion.
II. VERY SHORT ANSWERS TYPE QUESTIONS (1 Mark)	
17.	Asexual reproduction does not involve gametes whereas sexual reproduction involves gametes
18.	Binary Fission
19.	Each piece will regenerate into new Planaria.
20.	Sporangium
21.	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

22.	a) The greenish black powdery mass on a stale piece of bread is due to bread mould Rhizopus which reproduce by spore formation. (b) Hyphae or thread like structures are the vegetative part and tiny blob like structures or sporangia are the reproductive parts of the bread mould Rhizopus.
23.	Yeasts are eukaryotic microorganisms, classified in the kingdom of Fungi. Yeasts are chemoorganotrophs and they use organic compounds as a source of energy. Carbon is obtained through various sugars. Yeasts can metabolize sugars as they ferment sugar resulting in the formation of ethanol. So, sugar provides energy to yeasts, which helps to carry out various life processes.
24.	(a) Leaves of Bryophyllum possess adventitious buds in their marginal notches. The buds sprout to produce plantlets when leaves fall on soil. Leaves of Jasmine cannot undertake asexual reproduction as they do not develop adventitious buds.
25.	Reproduction is the process of producing new individuals of the same species by existing organisms of a species, so, it helps in providing stability to population of species by giving birth to new individuals as the rate of birth must be at par with the rate of death to provide stability to population of a species.
III. SHORT ANSWER TYPE QUESTIONS (3 Marks)	
26.	Diagrams – Fig. 8.1, page no.129
27.	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
28.	• 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 (5 Marks)	
29.	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. Diagram -Fig. 8.4, page 131
30.	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
31.	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.
32.	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 (Fig. 8.3, page 131). Regeneration is carried out by Specialised cells
33.	(i) Spore formation is a type of asexual reproduction found among most of the non-flowering plants and eukaryotic organisms like fungi *Rhizopus* (ii) (Fig. 8.6, page 132). (iii) 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 favorable conditions are found.
VI. BOARD BASED QUESTIONS	
34.	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.
35.	*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
36.	Asexual Reproduction Sexual Reproduction 1. It involves only single parent 1. It involves two parents 2. It does not involve fusion of gametes 2. It involves fusion of gamete
37.	(a) Budding, fragmentation and regeneration are considered as asexual mode of reproduction because only one parent is involved no sex cells are involved. (b) Regeneration in Planaria. The process of getting back a full organism from its body parts is called regeneration. Planaria reproduces by this method in which if the body of Planaria somehow gets cut into a number of pieces, then each body piece can regenerate into a complete Planaria by growing all the missing parts.
38.	i) (a) Reproductive part – Sporangia (b) Non-reproductive part – Hypha/Hyphae Dry slice of bread does not provide moisture and nutrients necessary for the germination and multiplication of Rhizopus. ii) Budding: Hydra uses regenerative cells for reproduction. A bud develops as an outgrowth due to repeated cell division at one specific site and develop into tiny individuals. On maturation, these buds detach from the parent and become new individuals. **Alternate answer:** Regeneration: It is carried out by specialized cells. If Hydra is cut or broken into many pieces, many of these pieces grow into separate individuals.
39.	(i) Plants grown by vegetative propagation are genetically similar to the parent plant. (ii) They can bear flowers and fruits faster than those plants that are produced by seeds. (iii) Plants that do not produce seeds too can be multiplied by this method. he various methods of vegetative propagation are: (i) cutting, (ii) layering, (iii) grafting, (iv) tissue culture. Layering: In layering, roots are induced on the stem of a rooted plant. When roots develop, that part of stem is detached from the parent plant and grown in the soil. Layering is of two types: Cutting: In this, a part of a plant, specifically a stem or leaf is cut and planted in the soil. These cuttings are sometimes treated with hormones to induce root development. The new plant is formed from the adventitious roots developing from the cutting.

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