



SCIENCE

Class 10 Chapter 8 –

How Do Organisms Reproduce
IMPORTANT QUESTIONS WITH
ANSWERS Science.

CLASS 10

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1. Newly formed DNA copies may not be identical at times. Give one reason. (AI2017)

Ans: When a cell reproduces, DNA replication occurs which results in formation of two similar copies of DNA. The process of copying the DNA leads to some variations each time. As a result, the DNA copies produced are similar to each other but sometimes may not be identical.

2. When a cell reproduces, what happens to its DNA?

Answer: When a cell reproduces, DNA replication occurs which forms two similar copies of DNA..

3. What is DNA?

Answer: DNA (deoxyribonucleic acid) is a polymer made up of large number of nucleotide units. It carries genetic information from generation to generation.

4. Name the life process of an organism that helps in the growth of its population.

Ans: Reproduction is a life process that helps in multiplication of an organism and growth of its population.

5. Reproduction is one of the most important characteristic 'of living beings. Give three reasons in support of the statement.

Answer: Reproduction is one of the most important characteristics of living beings because it is essential for existence and continuity of a species. It helps to pass genetic information to next generation. It brings variations in next generation which is the basis for evolution.

6. Define reproduction. How does it help in providing stability to the population of species?

Answer: The production of new organisms by the existing organisms of the same species is known as reproduction. It is linked to the stability of population of a species. DNA replication during reproduction ensures transfer of specific characters or body design features that is essential for an individual of a population to live and use that particular niche. Some variations present in a few individuals of population caused due to reproduction which also helps in their survival at changing niches.

7. What is DNA copying? State its importance.

Answer: DNA copying is the production of similar copies of DNA present in a cell using various chemical reactions. DNA copying is essential for reproduction through which the organisms pass on their body features to their offspring. Moreover, minor alternations during the process of DNA copying result in the production of variations. Such variations are useful for the survival of species over time.

8. What is the effect of DNA copying, which is not perfectly accurate, on the reproduction process? How does the amount of DNA remain constant through each new generation is a combination of DNA copies of two individuals? (AI 2014)

Answer:

In the process of reproduction, if DNA copying is not perfectly accurate, variation occurs. These in turn may allow few individuals of a population to survive in an altered niche and becomes the basis of evolution and over time. Such variations are useful for the survival of species.

The combination of DNA copies of two individuals, (male and female) occurs during sexual reproduction. Reduction division (meiosis) during gamete formation halves the chromosome number in both male and female gametes. Since these two gametes fuse during fertilisation, the original number of chromosomes (as in the parent) is restored in the offspring. By this way the amount of DNA remains constant in each new generation.

9. Name the method by which Spirogyra reproduces under favourable conditions. Is this method sexual or asexual? (Delhi 2017)

Answer: The method by which Spirogyra reproduces under favorable conditions is fragmentation. This is an asexual mode of reproduction.

10. How does Plasmodium reproduce. Is this method sexual or asexual? (Delhi 2017)

Answer: Plasmodium reproduces through multiple fission method. In this method, the parent organism splits to form many new organisms at the same time. This is an asexual method of reproduction.

11. Name the part of Bryophyllum where the buds are produced for vegetative propagation. (Delhi 2016)

Answer: Bryophyllum propagates vegetatively by the buds produced at the margins of leaves.

12. What happens when a Planaria gets cut into two pieces? (Delhi 2016)

Answer:

When Planaria is cut into two pieces then each piece grows into a complete organism. This is known as regeneration.

13. What happens when a mature Spirogyra filament attains considerable length? (AI 2016)

Answer: When a mature Spirogyra filament attains considerable length it simply breaks into two or more fragments and each fragment then grows into a new Spirogyra.

14. Name the method by which Hydra reproduces. Is this method sexual or asexual ? (Foreign 2016)

Ans: Hydra generally reproduces through budding. It is an asexual method of reproduction.

15. Name two simple organisms having the ability of regeneration. (AI 2015)

Answer:

Hydra and Planaria are two organisms that have the ability to regenerate.

16. Name the causative agent of the disease “kala- azar” and its mode of asexual reproduction. (Foreign 2015)

Answer:

Causative agent of the disease Kala-azar is Leishmania. It reproduces asexually by binary fission.

17. Write two differences between binary fission and multiple fission in a tabular form. (Delhi 2015)

Answer:

Differences between binary fission and multiple fission are as follows:

Binary fission	Multiple fission
(i) The parent organism, splits to form two new organisms, e.g., Amoeba, Paramecium.	The parent organism splits to form many new organisms at the same time, e.g., Plasmodium.
(ii) The nucleus of the parent body divides only once to produce two nuclei.	The nucleus of the parent body divides repeatedly to produce many nuclei.



18. List four modes of asexual reproduction other than fission in the living organisms.

(Delhi 2014)

Ans:The four modes of asexual reproduction other than fission in living organisms are :

[a] budding [b] spore formation [c] regeneration and [d] fragmentation.

19. List four advantages of vegetative propagation. (Delhi 2014)

Answer:

The following are the advantages of vegetative propagation:

[a] The characters of the parent plants are preserved hence a good variety produced can be propagated by vegetative means.

[b] The plants, which do not produce viable seeds or produce very few seeds, can be reproduced by this method. For example, banana, potato, grapes, sugarcane, rose, orange, etc.

[c] It is an easier, quicker and cheaper method of propagation.

[d] It is easier to get rid of pathogen from any part of plant by vegetative propagation.

20. List four modes of asexual reproduction. (Delhi 2014)

Answer:The four modes of asexual reproduction are :

[a] binary fission [b] budding [c] regeneration and [d] vegetative propagation.

21. How do Plasmodium and Leishmania reproduce? Write one difference in their mode of reproduction. (Foreign 2014)

Ans: Plasmodium and Leishmania reproduce by the process of fission which is an asexual mode of reproduction. Plasmodium reproduces by multiple fission. About 1000 daughter cells are produced by the multiple fission of a Plasmodium. Leishmania reproduces by the process of binary fission. In Leishmania, the splitting of parent cell takes place in a definite plane (longitudinally) with respect to flagellum at its end to produce two daughter cells.

22. Define multiple fission. Give its one example. (Foreign 2014)

Ans: Multiple fission is an asexual mode of reproduction in which the parent organism splits to form many new organisms at the same time. Multiple fission occurs in Plasmodium.

23. List two advantages of vegetative reproduction practised in case of an orange plant.

Answer: The two advantages of vegetative propagation practised in case of an orange plant are : The new plants produced by vegetative propagation will be exactly like the parent plant. Therefore, any desirable features of the parent plant will be replicated in the new plants. The orange plants that have lost the capacity to produce seeds, can also be propagated.

24. Name an organism which reproduces by spore formation. List three conditions favourable for spores to germinate and grow.

Ans: Rhizopus reproduce by the method of spore formation.

The three conditions favourable for spores to germinate and grow are moisture, suitable temperature and food (nutrition).

25. List two advantages of practising vegetative propagation in plants. Select two plants raised by this method from the list given below : Banana, Gram, Pea, Rose, Tomato, Wheat

Ans: Two advantages of the vegetative propagation of plants are:

Any desirable features of the parent plant can be replicated in the new plants.

Flowers and fruits can be grown in a shorter time as compared to the plants grown from seeds. The two plants raised by this method are banana and rose.

26. 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. (2018)

Answer: Difference between asexual and sexual mode of reproduction is as follows :

Asexual reproduction: Gametes are not formed hence fertilisation does not take place.

Sexual reproduction: Gametes are always formed and fertilisation takes place to form a zygote. Species reproducing sexually has a better chance of survival as variations occur

Only during the sexual reproduction. Variations increase the chances of survival of an individual by making them more fit. Selection of variations by environmental factors forms the basis of evolution.

27. What happens when

(a) accidentally, Planaria gets cut into many pieces-

(b) Bryophyllum leaf falls on the wet soil

(c) on maturation sporangia of Rhizopus bursts? (Delhi 2017)

Ans: (a) When Planaria accidentally gets cut into many pieces then its each piece grows into a complete organism. This is known as regeneration.

(b) When the Bryophyllum leaf falls on the wet soil, the buds present in the notches along the leaf margin develop into new plants. This is known as vegetative propagation.

(c) The sporangia of Rhizopus contain cells or spores that can eventually develop into new Rhizopus individuals when it bursts on maturation.

28. Describe reproduction by spores in Rhizopus. (AI 2017)

Answer: Fungus Rhizopus reproduces by spore formation. During the growth of Rhizopus, small rounded, bulb-like structures develop at the top of the erect hyphae. Such structures are called sporangia. Inside each sporangium, nucleus divides several times. Each nucleus gets surrounded by a little amount of cytoplasm to become spore. Large number of spores.

are formed inside each sporangium. After sometime sporangium bursts and spores are released in the air. When these spores land on food or soil, under favourable conditions, they germinate into new individuals.

28. What is vegetative propagation? State two advantages and two disadvantages of this method. (AI 2017)

Ans: Vegetative propagation is a type of asexual reproduction in which the plant parts other than seeds are used as a propagule.

Advantages of vegetative propagation :

Desirable character of the plant can be preserved through generation.

Seedless plants can be grown through this method.

Disadvantages of vegetative propagation :

Plants produced by this method possess less vigour and are more prone to diseases.

Plants produced by this method show no genetic variation.

29. What is multiple fission? How does it occur in an organism? Explain briefly. Name one organism which exhibits this type of reproduction. (Delhi 2016)

Ans: Multiple fission refers to the process of asexual reproduction in which many individuals are formed from a single parent. This method of reproduction occurs in unfavourable conditions. The unicellular organism.

develops a protective covering called cyst, over the cell. The nucleus of the cell divides repeatedly producing many nuclei. Later on, each nucleus is surrounded by small amount of cytoplasm and many daughter cells are produced within the cyst.

When conditions are favourable the cyst breaks and small offspring are liberated. This type of reproduction is seen in some protozoans, e.g., malarial parasite (Plasmodium).

30.Explain the term “regeneration” as used in relation to reproduction of organisms. Describe briefly how regeneration is carried out in multicellular organisms like Hydra.

Ans: The process of formation of entire organism from the body parts of a fully differentiated organism is called regeneration. It occurs by process of growth and development.

Simple animal like Hydra shows regeneration. When a small piece of Hydra breaks off it grows into complete new Hydra.

During regeneration, the cells of cut body part of the organism divide rapidly to make a mass of cells. The cells here move to their proper places within the mass where they have to form different types of tissues. In this way complete organism is regenerated.

31. in the context of reproduction of species state the main difference between fission and fragmentation. Also give one example of each. (AI 2016)

Answer: The main differences between fission and fragmentation are as follows:

Fission

Fragmentation

(i) Occurs in unicellular organisms.

Occurs in multicellular organisms.

(ii) Body of organism divides by mitotic divisions into two or more daughter cells. E.g., Leishmania.

Body of the organism splits into one or more fragments and each fragment forms a complete organism. E.g., Spirogyra.

32. What happens when (a) Planaria gets cut into two pieces(b) a mature Spirogyra filament attains considerable length(c) on maturation sporangia burst? (Foreign 2016)

Ans:(a) When Planaria is cut into two pieces then each piece grows into a complete organism. This is known as regeneration.

(b) When a mature Spirogyra filament attains a considerable length it breaks into small pieces called fragments. These fragments grow into new individuals and this mode of reproduction is called fragmentation.

(c) When a sporangium burst, large number of spores are released in the air. When these spores land on food or soil, under favourable conditions they germinate into new individuals.

33. What is vegetative propagation? List with brief explanation three advantages of practising this process for growing some types of plants. Select two plants from the following which are grown by this process : Banana, Wheat, Mustard, Jasmine, Gram (Foreign 2016)

Answer:

Vegetative propagation is an asexual method of reproduction in plants. In this method, new plants are obtained from the parts of old plants (like stems, roots and leaves), without the help of any reproductive organs.

Advantages of vegetative propagation are as follows:

Vegetative propagation is usually used for the propagation of those plants which produce either very few seeds or do not produce viable seeds.

Seedless plants can be obtained by artificial vegetative propagation.

Grafting is a propagation method which is very useful for fruit trees and flowering bushes. It enables to combine the most desirable characteristics of two plants.

Plants like rose, sugarcane, cactus, etc., can be rapidly propagated through stem cuttings as this method produces new plants from just one plant quickly without waiting for flowers and seeds. Banana and jasmine are generally grown through vegetative propagation method.

34(a) Name the following:

- (i) Thread like non-reproductive structures present in Rhizopus.**
 - (ii) ‘Blobs’ that develop at the tips of the non- reproductive threads in Rhizopus.**
- (b) Explain how these structures protect themselves and what is the function of the structures released from the ‘blobs’ in Rhizopus. (Delhi 2015)**

Answer: (a) (i) Threadlike non-reproductive structures present in Rhizopus are called hyphae. (ii) ‘Blobs’ developing at the tip of hyphae are called sporangia which contain spores. (b) ‘The structures called spores (released from ‘blobs’) are present in sporangia which can develop into new Rhizopus individuals. These spores are covered with thick walls that protect them until they come in contact with another moist surface and can begin to grow.

35.(a) Name the mode of reproduction of the following organisms and state the important feature of each mode : (i) Planaria (ii) Hydra (iii) Rhizopus

- (b) We can develop new plants from the leaves of Bryophyllum. Comment.**
- (c) List two advantages of vegetative propagation over other modes of reproduction. (2020)**

Answer: (a) (i) Planaria – Regeneration Regeneration of organism from its cut body parts occurs by the process of growth and development. Regeneration is an asexual mode of reproduction common in lower plants and animals.

(ii) Hydra – Budding

In budding, a small part of the body of the parent organism grows out as a bud which on detaching forms a new organism.

Budding occurs in yeast, some protozoans and certain lower animals.

(iii) Rhizopus – Spores

Spores are usually produced in sporangia.

Spore formation is a common method of an asexual reproduction in bacteria and most of the fungi.

(b) The leaves of a Bryophyllum have special type of buds in their margins. These buds may get detached from the leaves, fall to ground and then grow to produce new Bryophyllum plants. The buds can also drop to the ground together with the leaf and then grow to produce new plants.

(c) Advantages of vegetative propagation are :

It is a quick method of propagation.

The new plants produced by artificial vegetative propagation are exactly like the parent plants.

Many plants can be grown from one plant by vegetative propagation.

36. (a) What is fragmentation in organisms? Name a multicellular organism which reproduces by this method.

Answer: (a) Fragmentation is the mode of reproduction in which parent body breaks into two or more fragments and each fragment develops into a new individual. It is a method of reproduction in many filamentous algae, mycelial fungi and thalloid bryophytes, e.g., Spirogyra.

37. (a) What is spore formation?

(B) List two advantages for organisms to reproduce themselves through spores.

Answer:

(a) Spore formation is the process of formation of microscopic reproductive structures called spores. These spores when detaches from the parent gives rise to a new individual. Reproduction by the formation of spores is a common method of asexual reproduction in some bacteria and most of the fungi.

(B) Two advantages to spore producing organism are as follows:

Spores help organism to survive harsh environmental conditions as spores are covered by thick walls which protect them until they come in contact with moist surface and germinate. Spores are generally very small and light. Therefore, it ensures easy dispersal by wind, water and animal.

38. List two common signs of sexual maturation in boys and girls.

Answer:

(a) Two common signs of sexual maturation in boys and girls are :

Growth of pubic hair and extra hair in the armpits.

Development of oily skin and pimples.

39. What is the result of reckless female feticide?

Answer:

Female feticide is reducing the number of girls drastically in our country, which is also declining male-female sex ratio.

40. Which contraceptive method changes the hormonal balance of the body?

Ans: Chemical contraceptive method changes the hormonal balance of the body.

41. Write two factors that determine the size of a population. (2020)

Ans: The rate of birth and death in a given population will determine the size of a population.

42. What are all organisms called which bear both the sex organs in the same individual?

Give one example of such organism. (AI 2016)

Answer: Organisms which bear both male and female sex organs in the same individual are called bisexual. For example, Hibiscus.

43. List two functions of ovary of human female reproductive system. (AI 2016)

Answer: Two functions of ovary of human female are:

production of female gametes, i.e., ova

secretion of female hormones, i.e., estrogen and progesterone.

44. List two unisexual flowers. (Foreign 2016)

Answer: Flowers of papaya and cucumber are unisexual.

45. Why is fertilisation not possible without pollination? (Foreign 2016)

Answer:

The process of pollination (in plants) ensures that male gametes bearing structure called pollen comes in contact with the female reproductive structure of the plant. Once the male and female gametes are in close vicinity, they fuse and fertilisation is accomplished. Hence, fertilisation cannot take place without pollination.

46. Name the parts of a bisexual flower that are not directly involved in reproduction. (Foreign 2015)

Answer:

Calyx and corolla are parts of a flower that are not directly involved in reproduction.

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