Reproduction in Organisms



1. Why is reproduction essential for organisms?

Ans: Reproduction is important for organisms due to the fact that by reproduction we will reproduce our younger ones who're much like us in a maximum of our characters. Reproduction allows us to keep the existence of species even after our death. This process also helps to create recombination by the process of meiosis. It is a source of genetic recombination.

2. Which is a better mode of reproduction sexual or asexual? Why?

Ans: Sexual reproduction is known to be a better way of reproduction found in organisms. This method is found to be better because it enables new variants to be formed by combining the DNA of two different individuals, typically one of each species. This means that it involves the fusion of gametes of both the individuals i.e male and female to produce zygotes. This variation which was developed in offspring enables them to adapt to changing and challenging environments. In addition, it leads to the development of adapted organisms that ensure greater survival of a species. Conversely, asexual reproduction allows little or no variation. As a result, the individuals who are produced are found to be exact copies of their parents and themselves.

3. Why is the offspring formed by asexual reproduction referred to as clones?

Ans: Clone is a word denoted to a group of genetically identical organisms. As we all know, that only a single parent is involved in asexual reproduction, the offspring which is produced is genetically identical to the parent cell. As we all know that they are exact copies of their parents, the offspring is said to be a clone. This type of reproduction can be seen in many prokaryotic organisms and even in a few eukaryotic single-celled and multi-celled organisms.

4. Offspring formed due to sexual reproduction have better chances of survival. Why? Is this statement always true?

Ans: Yes, offsprings that are produced via sexual reproduction tends to have better survival rates as compared to the asexual reproduction. This is due to the fact that during sexual reproduction, the gametes of both of the parents, male and female, come

together and fuse. Thus, the offspring carries the genetic material from both the parents. This means that it involves the fusion of gametes of both the individuals i.e male and female to produce zygotes. This variation which was developed in offspring enables them to adapt to changing and challenging environments. In addition, it leads to the development of adapted organisms that ensure greater survival of a species.

5. How does the progeny formed from asexual reproduction differ from those formed by sexual reproduction?

Progeny formed from asexual	Progeny formed from sexual
reproduction	reproduction
Asexual reproduction is defined as the	Sexual reproduction is defined as the
mode of reproduction that does not	mode of reproduction that involves the
involve the fusion of the male and the	fusion of the male and the female
female gamete. Organisms that are	gamete of two individuals, typically
undergoing this mode of reproduction	one of each sex. Organisms that are
produce offspring that are	undergoing this mode of reproduction
morphologically and genetically	produce offspring that are not identical
identical to them.	to them.
Clone is a word denoted to a group of	During sexual reproduction, the
genetically identical organisms. As we	gametes of both of the parents, male
all know, only one parent is involved	and female, come together and fuse.
in asexual reproduction, the offspring	Thus, the offspring has the genetic
produced is genetically identical to the	material of both the parents. This
parent cell. Since they are exact copies	variation which was developed in
of their parents, offspring are said to	offspring enables them to adapt to
be clones.	changing and challenging
	environments.

Ans: The difference between progeny formed from asexual reproduction from those formed by sexual reproduction are as follows-

- 6. Distinguish asexual and sexual reproduction. Why is vegetative reproduction also considered a type of asexual reproduction?
- Ans: The difference between asexual reproduction and sexual reproduction are as follows-

Asexual reproduction	Sexual reproduction
It is Uniparental.	It is Biparental.
Gametes are not involved in this type of method.	Gametes are involved in this type of method.
Only mitotic division takes place here.	Both meiosis and mitosis will take place. Meiosis occurs during gamete production and is followed by mitosis following fertilisation.
Offspring are genetically similar to the parent	Offspring are different from parents.

Vegetative propagation

It is a type of process in which new plants are obtained without the production of sexual structures i.e seeds or spores. It involves the propagation of plants through different types of vegetative parts such as the rhizome, sucker, tuber, bulb, etc. In this, a fusion of the male and the female gamete does not take place and requires only one parent. Hence, vegetative reproduction can be stated under the category of asexual reproduction.

7. What is vegetative propagation? Give two suitable examples.

Ans: Vegetative propagation is defined as an asexual mode of reproduction in which new plants are obtained from the vegetative parts of the plant. It does not include the production of seeds or spores for new plants to propagate. Vegetative parts of plants include rhizomes, tubers, runners, etc. They can be used as reproductive organs to grow new plants.

Some of the examples of vegetative propagation are:

• Eyes of potato:

The surface of the potato has many buds on it called eyes. Each of these eyes, when buried in the ground, becomes a new plant that is identical to the mother plant.



• Leaf buds of Bryophyllum:

Bryophyllum plant leaves have multiple adventitious buds on their edges. These shoots have the ability to grow into tiny plants when the leaves break off the plant and come in contact with moist soil.



8. Define -

a. Juvenile phase.

Ans: The juvenile phase of an organism's life is described as the time of growth that begins after birth and ends before it achieves reproductive maturity. It is often termed as the vegetative phase.

b. Reproductive phase.

Ans: The reproductive phase is defined as the period when an individual organism is sexually active and attains reproductive maturity. In this phase, the production of gametes also takes place.

c. Senescent phase.

Ans: The senescence phase is the time after the reproductive phase when a cell loses its ability to reproduce. Here the cell can grow old and stop dividing, but it does not die. This is also known as cell aging.

9. Higher organisms have resorted to sexual reproduction despite its complexity . Why?

Ans: Higher organisms have resorted to sexual replication even after having such complexity because offspring of sexual reproduction have variations in their genes which helps their survival. It helps organisms to adapt to the environment easily. This is due to the fact that during sexual reproduction, the gametes of both of the parents, male and female, come together and fuse. Thus, the offspring tends to have the genetic material or information carried from both the parents. This means that it involves the fusion of gametes of both the individuals i.e male and female to produce zygotes. This variation which was developed in offspring enables them to adapt to changing and challenging environments.

10. Explain why meiosis and gametogenesis are always interlinked?

Ans: Meiosis is the process of cell division that reduces the number of chromosomes by half, and gametogenesis is the formation of male and female gametes. These two terms are often linked because gametes are only formed in diploid organisms through meiosis. Meiosis (reduced division) produces four gametes from a germ cell. Male and female gametes combine during fertilisation, resulting in a diploid zygote (i.e. with paired chromosomes).

11. Identify each part in a flowering plant and write whether it is haploid (n) or diploid (2n).

• Ovary <u>.....</u>

Ans: Ovary Diploid (2n).

• Anther

Ans: Anther Diploid (2n)

• Egg

- Ans: Egg Haploid (n)
 - Pollen
- **Ans:** Pollen Haploid (n)
 - Male gamete.....
- Ans: Male gamete Haploid (n)
 - Zygote.....
- **Ans:** Zygote Diploid (2n)

12. Define external fertilization. Mention its disadvantages.

Ans: External fertilization is defined as the process by which the fusion of the male and female gametes takes place outside the female body in an external environment, generally water. Animals that show external fertilization are fish, frogs, starfish, etc. External fertilization has certain disadvantages: external fertilization gives the eggs a lower chance of fertilization, which can result in large numbers of eggs being wasted during this process; In addition, there is a lack of adequate parental care for the offspring, resulting in a low survival rate in progress.

13. Differentiate between a zoospore and a zygote.

Ans: Difference between a zoospore and a zygote:

Zoospore	Zygote
Zoospore is found to be a type of	A zygote is known to be a type of spore
spore that is motile and asexual that	which is the non-motile diploid cell,
utilizes the flagella for movement.	which is formed as a result of
	fertilization.
Zoospore is an asexual reproductive	A zygote is formed as a result of sexual
structure.	reproduction.
Its ploidy may vary, haploid or	It is always diploid.
diploid.	

14. Differentiate between gametogenesis from embryogenesis.

Ans: Difference between gametogenesis and embryogenesis:-

Gametogenesis	Embryogenesis
Gametogenesis is defined as the	Embryogenesis is defined as the proces
process of the formation of haploid	of the development of the embryo from
male and female gametes from diploid	the repeated mitotic divisions of the
meiocytes through the process of	diploid zygote.
meiosis.	
Gametes which are formed are haploid	Embryo formed has 2n ploidy.
In this, both mitosis and meiosis occur.	In this, only mitosis occurs.

15. Describe the post-fertilization changes in a flower.

- Ans:
- Fertilization is the process of the fusion of the male and the female gamete, which leads to the formation of a diploid zygote.
- Once fertilization takes place, the sepals, petals, and stamens of the flower wither and fall off. The pistil, however, stays connected to the plant.
- The zygote then develops into the new part which is known as an embryo and the ovules change into the seed.
- The ovary develops into the fruit which develops a thick wail referred to as pericarp that is shielding in function.
- In the end, Ovule develops into seed and ovary into fruit.
- 16. What is the bisexual flower? Collect five bisexual flowers from your neighborhood and with the help of your teacher find out their common and scientific names.
- **Ans:** A flower that contains both of the reproductive structures i.e the male and female reproductive structure (stamen and pistil) is called a bisexual flower. Examples of plants which bisexual flowers are:
 - Water lily scientific name -Nymphaea odorata
 - Rose scientific name -Rosa multiflora
 - Hibiscus scientific name -Hibiscus rosa-sinensis
 - Mustard scientific name -Brassica nigra

17. Examine a few flowers of any cucurbit plant and try to identify the staminate and pistillate flowers. Do you know any other plant that bears unisexual flowers?

Ans:



The cucurbits have unisexual flowers. These types of flowers have stamen or pistil. Staminate flowers, for example, feature vivid yellow petals and stamens, which indicate the male reproductive mechanism. On the other hand, Pistilized flowers only have the pistil, which represents the female reproductive structure. If the fruit is visible in a fertilized female flower, it is very small and hardly visible. Other examples of plants that have unisexual flowers are papaya, corn, cucumber, etc.

18. Why are offspring of oviparous animals at a greater risk as compared to offspring of viviparous animals?

Ans: Egg-laying animals which are commonly called oviparous lay eggs outside their bodies. Due to this reason, the eggs of these animals are constantly threatened by various environmental factors. On the other hand in viviparous animals, the development of the egg takes place within the body of the female. protects the embryo or fetus from predators. Therefore, the offspring of an egg-laying or egg-laying animal are at greater risk than the offspring of a viviparous animal that gives birth to its young.

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