

# Reproduction in Organisms

## Question 1:

Select the proper choice from the given multiple choices.

### Question 1.1:

1. **Asexual reproduction** is:

- (A) a fusion of specialized cells
- (B) a method by which all types of organisms reproduce
- (C) a method producing genetically identical offsprings.
- (D) a method in which more than one parent are involved

### Solution :

C. A method producing genetically identical offsprings

Asexual reproduction is a method where one parent cell divides to form daughter cells which are genetically identical. During asexual reproduction, gametes are not involved.

### Question 1.2:

One of the following organisms does not reproduce by binary fission. This is:

### Solution :

B. Plasmodium

Plasmodium reproduces by multiple fission.

### Question 1.3:

Reproduction is essential for living organisms in order to:

### Solution :

D. Continue the species for ever

Reproduction is the ability of a living organism to give rise to a new individual of the same type. It is an essential process for the survival of the species.

### Question 1.4:

A multicellular organism which reproduces by budding is:

### Solution :

D. Hydra

Hydra is a multicellular animal which reproduces asexually by budding.

**Question 1.5:**

A simple multicellular animal having tentacles and lives in freshwater reproduces by the asexual method of :

**Solution :**

C. Budding

Hydra is a multicellular animal which has tentacles and lives in freshwater. It reproduces asexually by budding.

**Question 1.6:**

In which of the following living organisms spore formation takes place ?

**Solution :**

A. Mucor

Mucor is a fungus which reproduces asexually by spore formation.

**Question 1.7:**

Method of a sexual reproduction in Spirogyra.

**Solution :**

B. Breaking up of filaments into smaller bits

Spirogyra is a multicellular filamentous alga which divides by breaking filaments into smaller bits.

**Question 1.8:**

An alga which reproduces by the asexual reproduction method called fragmentation is:

**Solution :**

D. Spirogyra

Spirogyra is a multicellular filamentous alga which divides by breaking filaments into smaller bits. This process is called fragmentation.

**Question 1.9:**

The cut part of plant stem (having roots and fixed to ground) which is used in the process of grafting is.....

**Solution :**

A. Stock

In grafting, the cut stem with roots is called stock and the stem without roots, to be fixed on stock is called scion.

**Question 1.10:**

In asexual reproduction, two offsprings having the same genetic material and the same body features are called:

**Solution :**

C. Clones

Two individual organisms having identical genetic material and physical features are called clones.

**Question 2:**

Answer the following questions in brief :

**Question 2.1:**

(A) Name two animals which reproduce sexually.

(B) Name two animals which reproduce asexually.

**Solution :**

Two animals which reproduce sexually – Cow, Monkey.

Two animals which reproduce asexually – Hydra, Planarian

**Question 2.2:**

Name the method by which Paramecium reproduces. Is this method sexual or asexual?

**Solution :**

Paramecium reproduces by binary fission. It is an asexual method of reproduction.

**Question 2.3:**

Name the asexual method of reproduction in yeast.

**Solution :**

Yeast reproduces asexually by budding.

**Question 2.4:**

**Solution :**

Asexual method of reproduction in the following organisms is:

1. Hydra – Budding
2. Plasmodium – Multiple fission

**Question 2.5:**

**Solution :**

Rose plant can be artificially propagated by a method called cutting.

**Question 2.6:**

**Solution :**

Citrus plants can be artificially propagated by a method called grafting.

**Question 2.7:**

**Solution :**

Two plants which can be propagated by layering method include lemon and chrysanthemum.

**Question 2.8:**

**Solution :**

Two plants which can be propagated by cutting method include rose and bougainvillea.

**Question 2.9:**

**Solution :**

Different methods of asexual reproduction:

- Binary fission
- Multiple fission
- Fragmentation
- Regeneration
- Budding
- Spore formation
- Vegetative propagation

**Question 3:**

**Question 3.1:****Solution :**

1. The basic difference between asexual and sexual reproduction is that during asexual reproduction only one parent results in the formation of offsprings, whereas during sexual reproduction, gametes from two parents fuse to result in the formation of offsprings. The offsprings produced by asexual reproduction are exactly identical to each other and the parent, where as the offsprings produced by sexual reproduction are not exactly identical to each other or to either of the parents.
2. Organisms which reproduce by sexual method – Cat, Humans, Birds.

Organisms which reproduce by asexual method – Amoeba, Hydra.

**Question 3.2:****Solution :**

Regeneration is a method of reproduction by some plants and animals which have the capacity to regenerate into a complete organism from a cut part of their body. Animals like Hydra and Planaria can regenerate fully from their cut body parts.

**Question 3.3:****Solution :**

Vegetative propagation is an asexual method of reproduction where a complete new plant can be grown from parts of a plant such as root, stem and leaves. Here, reproductive organs are not used for growing new plants.

Example –

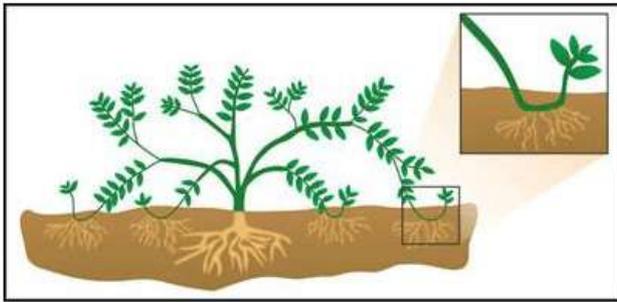
- The Buds present on the leaf margins of the Bryophyllum plant can develop into an entirely new plant on falling on land.
- Buds are present as eye spots on potato tubers. When this tuber is planted in the soil, it forms a new plant due to the growth of buds.

Advantages of vegetative propagation:

- Plants with dormant seeds can be propagated quickly and with ease.
- Only one parent plant is required.
- Offsprings are identical to the parent; hence, beneficial characters are preserved.

**Question 3.4:****Solution :**

- Layering is a method of artificial propagation in some plants.
- In this method, a part of the stem is pulled towards the ground and covered with soil (as shown in the diagram).
- Some weight is also put on the stem to prevent it from getting erect again.
- Soon, the covered part of the stem develops roots.
- This can now behave as an independent plant; hence, it is detached from the parent plant.
- Lemon and chrysanthemum plants can be propagated by layering method



**Question 3.5:**

**Solution :**

- a. Tuber is a modified stem or a modified root which swells or enlarges as it stores nutrients. Example – Sweet potato is a root tuber and potato is a stem tuber.
- b. Potato is a commonly used vegetable which is propagated by using tubers.

**Question 3.6:**

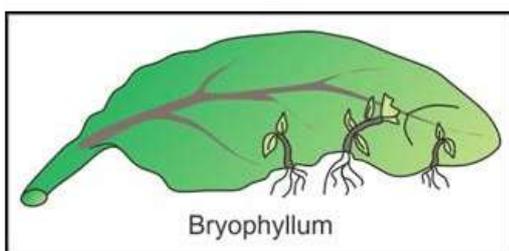
**Solution :**

Vegetative propagation is an asexual method of reproduction where a completely new plant can be grown from the parts of a plant such as the root, stem and leaves. Here, reproductive organs are not used for growing new plants.

**Question 3.7:**

**Solution :**

- The leaves of Bryophyllum plants possess buds on its margin (as shown in the diagram).
- These buds, when they fall on the land or when they are detached from the leaf and sown in the soil, can form a completely new plant.
- Thus, a new Bryophyllum plant can be produced from the leaves of the old plant.



**Question 4:**

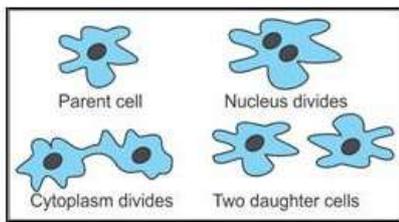
**Question 4.1:**

**Solution :**

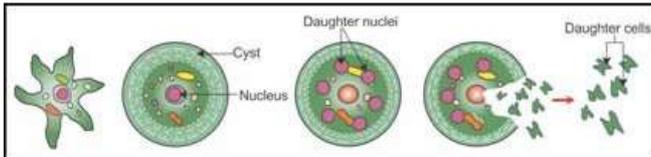
Amoeba reproduces by fission and Spirogyra reproduces by fragmentation.

Fission: Amoeba is a unicellular organism which reproduces asexually by binary fission or multiple fission.

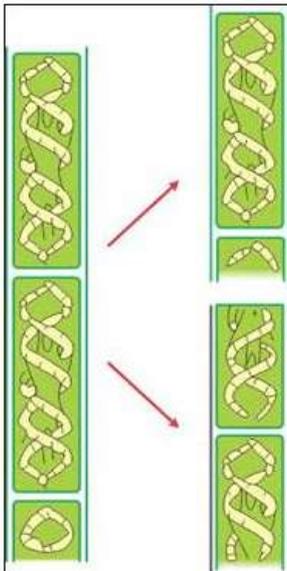
During binary fission, first, the nucleus of Amoeba elongates and divides into two parts. Following the division of nucleus, the cytoplasm of the cell divides and surrounds each nucleus. The cell wall constricts and finally, Amoeba divides into two daughter cells.



Multiple fission is the method of asexual reproduction where the parent cell divides to form many new offsprings simultaneously. During unfavourable conditions, Amoeba forms a cyst around itself. Within the cyst, the nucleus of Amoeba divides several times and forms many small nuclei. Small amount of cytoplasm surrounds each nuclei and a cell membrane is formed around each of them. Thus, within the cyst of Amoeba, many small daughter cells are present. During favourable conditions, the cyst ruptures and releases these daughter cells which mature to new Amoebae.



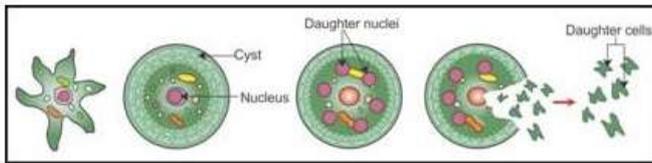
Fragmentation: Spirogyra is a multicellular filamentous alga. It reproduces asexually by fragmentation. The organism breaks its body into two or more pieces. These cut parts of the body mature in favourable conditions and each develops to form a completely new spirogyra.



#### Question 4.2:

#### Solution :

- Multiple fission is the method of asexual reproduction where the parent cell divides to form many new offsprings simultaneously.
- During unfavourable conditions, the parent cell forms a cyst around itself.
- Within the cyst, the nucleus divides several times and forms many small nuclei. Small amount of cytoplasm surrounds each nuclei and a cell membrane is formed around each of them.
- Thus, within the cyst, many small daughter cells are present.
- During favourable conditions, the cyst ruptures and releases these daughter cells which mature into a new organism
- Example – Amoeba and Plasmodium reproduce by multiple fission.



**Question 4.3:**

**Solution :**

- Fungi reproduce by forming reproductive units called spores.
- Spores are microscopic units which are present within the protective coats in fungi.
- The protective coat bursts to release the spores in the surrounding medium.
- These spores then settle on food or nutrient medium.
- When these spores get favourable conditions, they germinate to form a new fungal organism.

