REPRODUCTION IN PLANTS

EXERCISE

Question 1:

Fill in the blanks:

(a) Production of new individuals from the vegetative part of parent is called _____.
(b) A flower may have either male or female reproductive parts. Such a flower is called _____.
(c) The transfer of pollen grains from the anther to the stigma of the same or another flower of the same kind is known as _____.
(d) The fusion of male and female gametes is termed as _____.
(e) Seed dispersal takes place by means of _____, _____, and _____.

Answer:
(a) vegetative propagation
(b) unisexual flower
(c) pollination
(d) fertilisation
(e) wind, water, animals

Question 2:

Describe the different methods of asexual reproduction. Give examples.

Answer:

Asexual reproduction is a type of reproduction that involves only one parent and results in offspring that are genetically identical to the parent. There are several different methods of asexual reproduction, including:

1. Budding: In budding, a new organism develops from an outgrowth or bud on the parent. The bud grows by mitotic cell division and eventually detaches to become an independent organism.
- Example: Hydra, Yeast

2. Fragmentation: In fragmentation, the parent organism breaks into fragments, and each fragment develops into a new organism. This method is common in simple multicellular organisms.
- Example: Spirogyra, Planaria

3. Spore Formation: In spore formation, the parent organism produces spores, which are specialized cells that can develop into new individuals. Spores are typically released into the environment and can grow into new organisms when conditions are favourable.
- Example: Fungi (e.g., Mucor, Rhizopus), Ferns

4. Vegetative Propagation: In vegetative propagation, new plants grow from parts of the parent plant, such as roots, stems, or leaves. This method is common in many plants and can occur naturally or be induced artificially.
- Examples: Runners in strawberry plants, tubers in potatoes, bulbs in onions.

Each of these methods allows organisms to reproduce efficiently without the need for a mate, ensuring the rapid and consistent production of offspring.

Question 3:
Explain what do you understand by sexual reproduction?

Answer:
Sexual reproduction in plants involves the fusion of male and female gametes, resulting in offspring that are genetically diverse. The male gametes are contained in pollen grains, produced by the anthers, while the female gametes are within the ovules in the ovary. Pollination, the transfer of pollen from anther to stigma, precedes fertilization. After pollination, a pollen tube forms, allowing the male gamete to reach and fertilize the ovule, forming a zygote. The zygote develops into a seed, which eventually grows into a new plant. This process promotes genetic variation and adaptability within plant species.

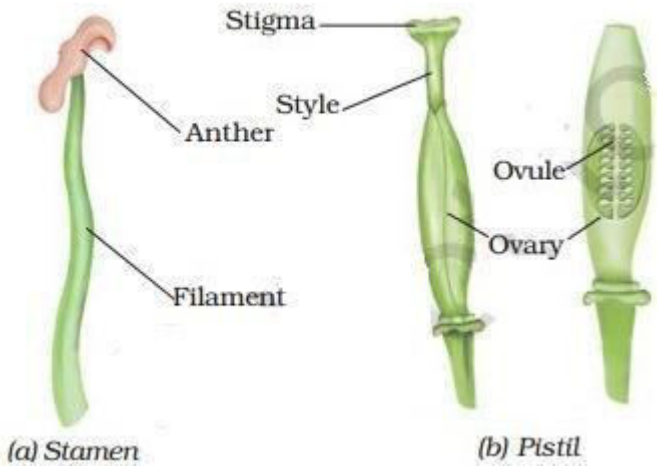
Question 4:
State the main differences between asexual and sexual reproduction.

Answer:
The main differences between asexual and sexual reproduction are as follows:

Asexual reproduction	Sexual reproduction
Only one parent is needed.	Two parents, a male and a female are required
Offspring are identical to their parents.	Offspring exhibit variation with respect to their parents
No seed is formed. Fragmentation, budding, spore formation, vegetative propagation are its different types.	Seeds are formed due to the fusion of male and female gametes.
Spirogyra, yeast, moulds, and potato exhibit asexual reproduction.	Fruit bearing plants, like mango and China rose, reproduce sexually.

Question 5:
Sketch the reproductive parts of a flower.

Answer:



Question 6:
Explain the differences between self-pollination and cross-pollination.

Answer:
The differences between self-pollination and cross-pollination are as follows:

Self-pollination	Cross-pollination
Pollens are transferred to the stigma of the same flower.	Pollens are transferred to the stigma of a different flower.
Does not require pollinating agents.	Requires pollinating agents.
Occurs in papaya, corn, cucumber, etc.	Common in most of flowers like rose, China rose, etc.

Question 7:
How does the process of fertilisation take place in flowers?

Answer:
In flowers, fertilization begins with pollination, where pollen grains from the anther land on the stigma. The pollen grain germinates, forming a pollen tube that grows down the style toward the ovary. This tube carries the male gametes. Upon reaching the ovule, one male gamete fuses with the female gamete (egg cell) inside the ovule, forming a zygote. This zygote develops into an embryo, and the ovule transforms into a seed. The surrounding ovary matures into a fruit, which protects the seed and aids in its dispersal, completing the fertilization process in flowering plants.

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Question 8:
Describe the various ways by which seeds are dispersed.

Answer:
Seeds are dispersed through various methods to ensure species propagation.
Wind dispersal carries lightweight seeds, such as dandelions and maples, over distances.
Water dispersal involves seeds like coconuts, which can float and travel via water bodies.
Animal dispersal occurs when animals eat fruits and excrete seeds elsewhere or when seeds attach to their fur, as with burrs
Dispersal by explosion - Some seed are dispersed by bursting of fruits with sudden jerks. In this, the seeds are scattered far away from the parent plant. This is called the explosive mechanism of seed dispersal. Example – Pea, caster and balsam.

Question 9:
Match the following columns:

Column I	Column II
(a) Bud	(i) Maple
(b) Eyes	(ii) Spirogyra
(c) Fragmentation	(iii) Yeast
(d) Wings	(iv) Bread mould
(e) Spores	(v) Potato
	(vi) Rose

Answer:
(a)-(iii), (b)-(v), (c)-(ii), (d)-(i), (e)-(iv)

Question 10:
Tick (✓) the correct answer.

(a) The reproductive part of a plant is the
(i) leaf
(ii) stem
(iii) root
(iv) flower

(b) The process of fusion of the male and the female gametes is called
(i) fertilisation
(ii) pollination
(iii) reproduction
(iv) seed formation

(c) Mature ovary forms the
(i) seed
(ii) stamen
(iii) pistil
(iv) fruit

(d) A spore producing organism is
(i) rose
(ii) bread mould
(iii) potato
(iv) ginger

(e) Bryophyllum can reproduce by its
(i) stem
(ii) leaves
(iii) roots
(iv) flower

Answer:
(a) (iv) The reproductive part of a plant is the flower.
(b) (i) The process of fusion of the male and female gametes is called fertilisation.
(c) (iv) Mature ovary forms the fruit.
(d) (ii) A spore producing organism is bread mould.
(e) (ii) Bryophyllum can reproduce by its leaves.