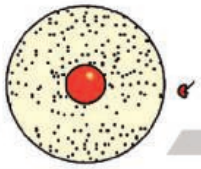
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CLASS XII BIOLOGY NOTES

Key Notes and Important Questions with Answers

REPRODUCTION IN ORGANISMS





Chapter - 1

Reproduction in Organisms

Clone : Morphologically and genetically similar individuals.

Juvenile Phase : It is the period of growth and maturity before an organism can reproduce sexually.

Meiocytes : These are specialized cells of diploid organisms which undergo meiosis to produce gametes.

Pericarp : It is the protective coverning of fruit, may be divided into epicarp, mesocarp and endocarp.

Parthenogenesis : Development of an egg into an embryo without fertilisation. e.g. in rotifers, honeybees, turkey and some lizards.

Monoecious Plants : Plants having both male and female flowers on same plant. e.g. cucurbits and coconut. The term 'homothallic' is used in Fungi for same condition.

Dioecious Plants : Plants having male and female flowers on separate plant. e.g. Papaya and date palm. The term 'heterothallic' is used in fungi for the same condition.

Oestrus Cycle : The reproductive cycle in non-primate mammals like cows, sheep, rats, deer, dogs and tigers etc;. The sexually active females referred to as being in 'heat' at a specific time of Oestrus cycle. They reabsorb the endometrium if conception does not occur.

Asexual Reproduction

In single celled organism	**In algae, fungi and multicellular lower animals**	**Vegetative propagation**
Binary fission e.g. *Amoeba, Paramecium*	Zoospore e.g. *Chalamydomonas*	Runner e.g. *Oxalis*

- Multiple fission e.g. *Plasmodium*
- Conidia e.g. *Penicillium*
- Bud e.g. *Hydra*
- Gemmules e.g. Sponge
- Fragmentation e.g. *Spirogyra*
- Sporulation e.g. *Amoeba*, *Paramecium*
- Regeneration e.g. *Hydra, Planaria*
- Rhizome e.g. Ginger
- Sucker e.g. Banana
- Offset e.g. Water hyacinth
- Bulb e.g. Onion
- Leaf buds e.g. *Bryophyllum*
- Bulbil e.g. *Agave*
- Eye buds e.g. Potato

Gamete Transfer

1. **In Algae, Bryophytes and Pteridophytes :** The male and female gametes are flagellated and motile, need a medium (water) to reach to egg.
2. **In seeded plants :** Pollen grains are transferred to stigma of flower of same species by various agents, like wind, water, insects, birds and ants etc.

3. In animals :

(a) By Copulation : e.g., Reptiles, Birds and Mammals.

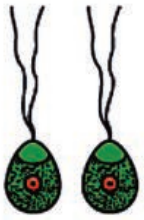
(b) By External medium : e.g., Fishes and Amphibians.

Sporulation : During unfavourable conditions organisms like *Amoeba* surrounded by resistant coat (three layered—hard covering) or cyst. This is called encystation. Within cyst a number of spores are formed. On returning favourable conditions, the cyst burst and spores are liberated and gradually grows in adults. This process is known as sporulation (multiple fission).

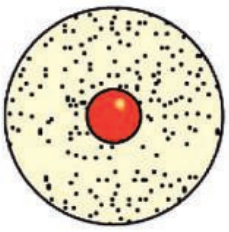
Fragmentation : It is a type of asexual reproduction where an organism splits into fragments. Their fragments develops into fully grown individual. e.g. *spirogyra*, fungi and some annelids.

Regeneration : It is a process of renewal, restoration and growth. It can occur at the level of the cell, tissue and organ. It is common in *Hydra, Planaria* and echinoderms

- In human, liver has power of regeneration, if it is partially damaged.
- During danger a lizard discard a part of its tail which can regenerate later.



Isogametes-
Cladophora (alga)



Heterogametes-
Fucus (alga)



Heterogametes-
Human beings

Events in Sexual Reproduction

- Pre-fertilisation Events
  - Gametogenesis
  - Gamete Transfer
- Fertilisation
  - External
  - Internal
- Post Fertilisation Events
  - The zygote formation
  - Embryogenesis

Asexual Reproduction	Sexual Reproduction
(i) Being uniparental, mating is not required.	(i) Being biparental, mating is required.
(ii) Fusion of Gametes is not involved.	(ii) Fusion of Gametes is involved.

Questions

VSA (1 Marks)

1. There are 380 chromosomes in meiocytes of a butterfly. How many chromosomes does male gamete of butterfly have ?
2. Which characteristic property of *Bryophyllum* is expolited by gardeners ?
3. Mention the unique flowering phenomenon exhibited by *strobilanthus kunthiana* (Neelakuranji).
4. Mention the unique feature with respect to flowering and fruiting in bamboo species.

SA - I (2 Marks)

5. Higher organisms have resorted to sexual reproduction inspite of its complexity. Why ?
6. Bryophytes and Pteridophytes produce a large number of male gametes but relatively very few female gametes. Why ?

SA - II (3 Marks)

7. Distinguish between gametogenesis and embryogenesis.
8. Fill the blank spaces a, b, c, and d given in the following table.

S. No.	Organism	Organ	Gamete
(i)	a	Testes	Spermatozoa
(ii)	Human female	b	Ovum
(iii)	Plant (Angiosperm)	c	Pollen grains
(iv)	Plant (Pteridophytes)	antheridium	d

9. (a) Why is vegetative propagation also considered as a type of asexual reproduction ?

   (b) Which is better mode of reproduction : Sexual or Asexual ? Why ?

Answers

VSA (1 Mark)

1. 190 chromosomes.
2. Adventitious bud arising from margin of the leaf.
3. Flower once in 12 years.
4. Flower once in their life time after 50-100 years, produce large no. of fruits and die.

SA - I (2 Marks)

5. Because of variations, gene pool, vigour and vitality and parental care.
6. Because male gemete need medium (water) to reach egg/female gamete. A large number of the male gametes fail to reach the female gamete. It increases the probability of fertilisation.

SA - II (3 Marks)

7.

Gametogenesis	Embryogenesis
1. Formation of gametes	Formation of Embryo
2. Produces haploid gametes	Embryo is diploid
3. Cell division is meiotic	Cell divison is mitotic.

8. a = Human male b = ovary
   c = Anther d = Antherozoid
9. (a) Vegetative propagation takes place when new individuals arise from vegetative part of parent and have characters similar to that of parent plant.
   (b) Sexual reproduction, it introduces variations in offsprings and has evolutionary significance. It helps offsprings to adjust according to the changes in environment. It produces better offsprings due to character combination.