Date :

How do Organism Reproduce

Notes:

Introduction

→ Reproduction is the process by which living organisms produce new individuals similar to themselves.

→ Nucleus of the cell contains DNA (Deoxyribose Nucleic Acid) which is the heriditity material.

→ Variation are useful for the survival of the individual and species over time as well as basis for evolution.

Types of Reproduction

1) Asexual Reproduction.

→ A single individual give rise to new individual
→ Gametes are not formed.
→ New individual is identical to parent.
→ Adopted by lower organisms.

2) Sexual Reproduction

→ Two individual i.e., one male and one female are needed to give rise to new individual.

→ Gametes are formed.

→ New individual is genetically similar but not identical to parents.

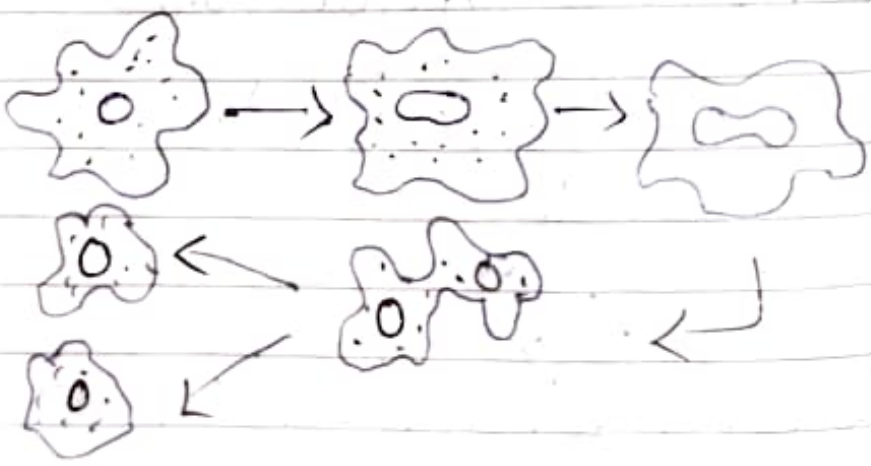
→ Adopted by higher organisms.

Modes of Asexual Reproduction

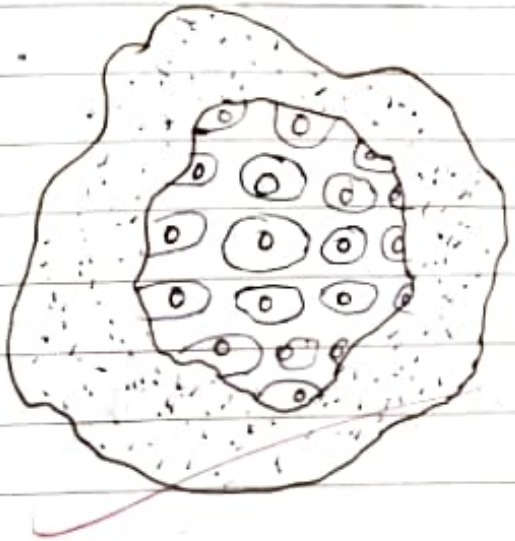
* Fission

→ The parent cell divides into daughter cells.

- Binary fission: 2 cells are formed. Ex. amoeb

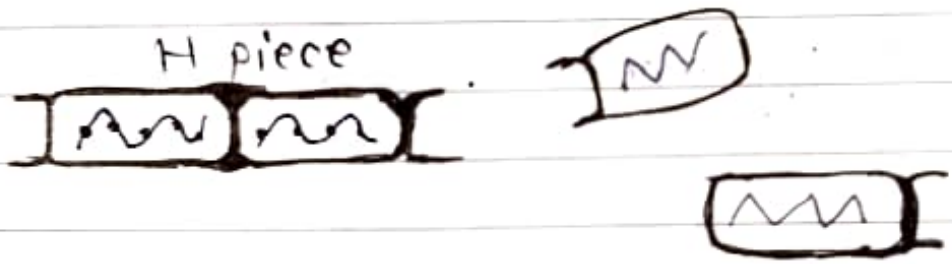


- **Multiple fission:** Many cells are formed
  Ex- Plasmodium



* **Fragmentation:**

→ The organism breaks up into smaller pieces upon maturation, each piece develops into new individuals. Ex. Spirog



* **Regeneration:**

→ If organism is somehow cut or broken into many pieces, each piece grows into a complete organism. Ex- Planaria, Hydra

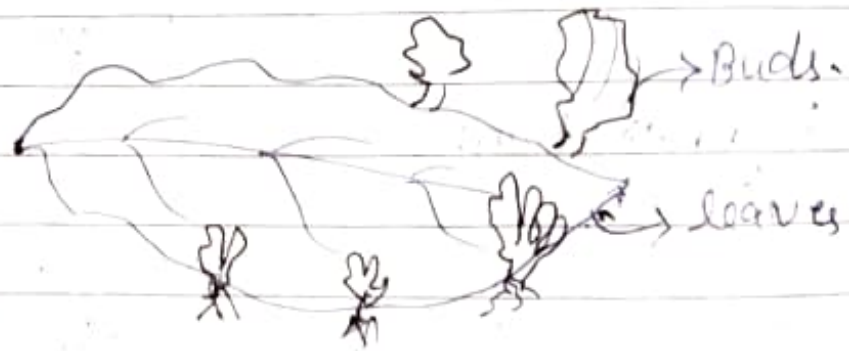
* Budding

→ A bud is formed which develops into tiny individual. It detaches from parent body upon maturation and develops into new individual.
Ex: Hydra

Vegetative Propagation

→ In many plants, new plant develops from vegetative parts such as:

- By root: Ex: Sweet potato, reddish
- By stem: Ex: Potato, Ginger.
- By leaves: Ex: Bryophyllum



Bryophyllum leaves

Artificial methods in Vegetative propagation

(i) Grafting: Ex. Mango
(ii) Cutting: Ex. Rose
(iii) Layering: Ex: Jasmine
(iv) Tissue Culture: New plants are grown by using growing tip of plant.

→ These growing cells are kept in a culture medium leads to the formation of callus. Callus is then transferred to hormone medium which causes growth and differentiation

- **Benefits of Tissue Culture**

→ We can grow plants like banana, rose Jasmine etc. that have lost the capacity to produce seeds.

→ New plant are genetically similar to parents.

→ Helps in growing seedless fruits.

(v) Spore formation: Spores are small bulb like structures which are covered by thick walls. Under favourable conditions, they germinate and produce new organism Ex. Rhizopus

Sexual Reproduction

→ When reproduction takes place as a result of the fusion of male and female gametes is called sexual reproduction.

→ fusion of gametes is called fertilization which results in variation.

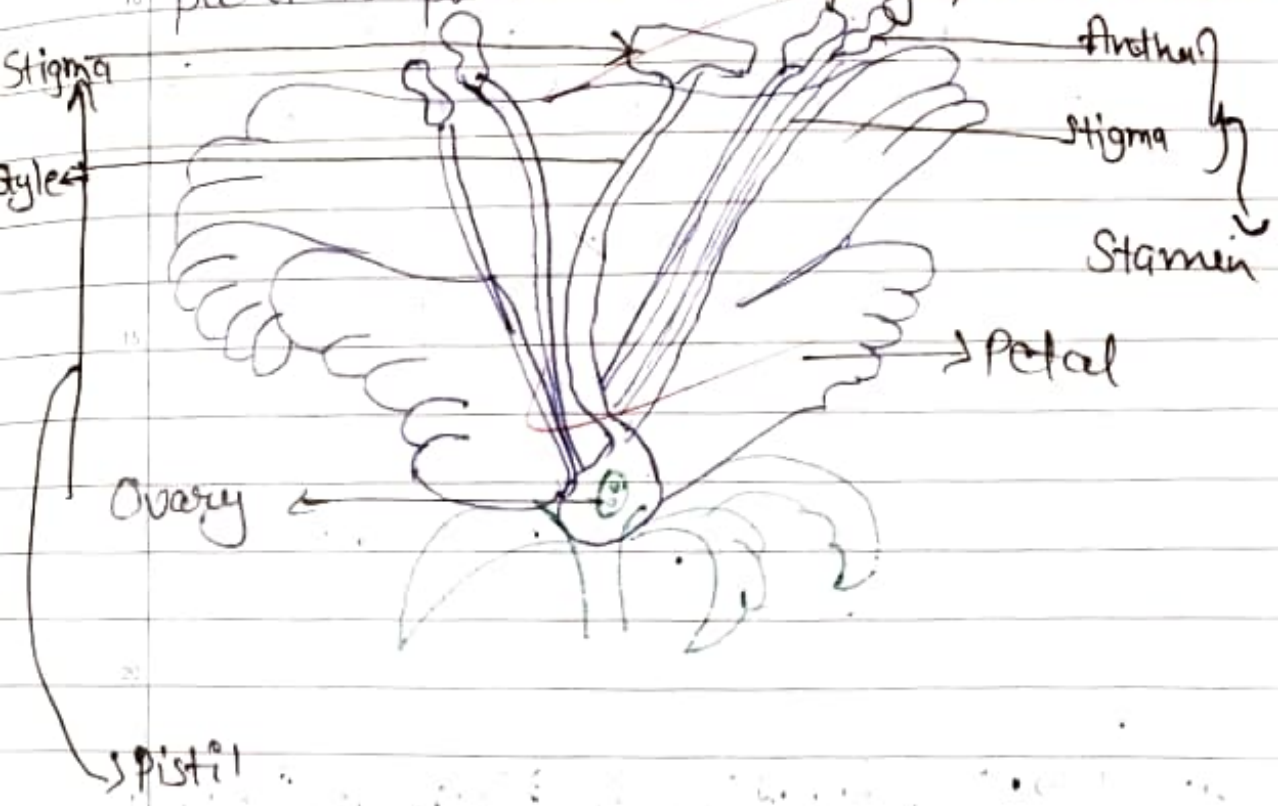
* Sexual Reproduction in Plants:

→ Flowers are the reproductive organs of plants.

→ A typical flower consists of four main whorls namely sepals, petals, Stamens and pistil.

Types of flower

- **Bisexual flower:** Both male and female reproductive parts are present. Ex: Hibiscus, mustard.
- **Unisexual flower:** Either male or female reproductive part is present. Ex: Papaya, water melon.



Structure of Flower

* Process of Seed formation

→ Pollen grain, produced in the anther are transferred to the stigma of same flower (self pollination) or stigma of another flower (cross pollination)

- Through agents like air, water or animals.

→ Pollen grains germinate and form pollen tubes which pass through style to reach upto the ovules present in ovary.

→ The fusion of male and female gamete is called fertilization. Zygote is produced inside the ovary.

→ Zygote divides to form embryo. Ovule develops thick coat and changes into seed gradually

→ Ovary changes into fruit and other parts of flower fall off.

* Reproduction in Human Being

→ Human use sexual mode of reproduction

→ Sexual maturation: The period of life when production of germ cells i.e. ova (female) and sperm (male) start in the body. This period of sexual maturation is called

• puberty.

* Changes at Puberty

• Common in male and female

→ Thick hair growth in armpits and genital area.

→ Skin becomes oily, may result in pimples.

• In girls

→ Breast size begin to increase
→ Girls begin to menstruate.

• In boys

→ Thick hair growth on face
→ Voice begin to crack

* Male Reproductive System

(i) Testes

→ A pair of testes are located inside scrotum which is present outside the

abdominal cavity.

→ Scrotum has a relatively lower temperature needed for the production of sperms.

→ Male germ cell i.e. sperm are formed here

→ Testes release male sex hormone (testosterone)

Function of testes

→ Regulate production of sperms
→ Bring changes at puberty.

(ii) Vas deferens

→ It passes sperms from testes upto urethera

(iii) Urethra

→ It is common passage for both sperms and urine. Its outer covering called penis

(iv) Associated glands.

→ seminal vesicles and prostate gland and their secretion to the sperms. This fluid provide nourishment to sperms and make this transport easy.

→ sperm along with secretion of glands form semen.

* Female Reproductive System

(i) Ovary

→ A pair of ovary is located in both sides of abdomen

→ Female germ cell i.e. eggs are produced here.

→ At the time of birth of a girl, thousands of immature egg are present in the ovary.

→ At the onset of puberty, some of these eggs start maturing.

→ One egg is produced every month by one of the ovaries.

(ii) Oviduct or fallopian tube

→ Receives the egg produced by ovary and transfer it to the uterus.

→ Fertilisation i.e. fusion of gametes takes place here.

(iii) Uterus

→ It is a bag-like structure where development of the baby takes place.

→ Uterus open into vagina through cervix

* Fertilisation of egg

• When egg is fertilized

→ The fertilized egg called zygote is planted in uterus and develops into an embryo

→ The embryo gets nutrition from the mother's blood with the help of a special tissue called placenta. It provides a large surface area for exchange of glucose, oxygen and waste material.

→ The time period from fertilization up to the birth of the baby is called gestation period. it is about 9 month.

- **When egg is not fertilized**

→ The uterus prepares itself every month to receive fertilized egg.

→ The lining of the uterus becomes thick and spongy, required to support the embryo.

→ When fertilization had not taken place this lining is not needed any longer.

→ This lining breaks and comes out through vagina as blood and mucus.

→ This cycle takes around 28 days every month and called menstruation.

* **Reproductive health**

→ Reproductive health means a total well-being in all aspects of reproductive i.e. physical emotional, social and behavioural.

- Sexually Transmitted Diseases (STDs).

→ Many diseases can be sexually transmitted such as:

(i) Bacterial: Gonorrhoea and syphilis

(ii) Viral: Warts and HIV - AIDS

→ Use condom prevents these infection to some extent.

→ Contraception: It is the avoidance of pregnancy, can be achieved by preventing the fertilization of ova

- Methods of Contraception.

(i) Physical barriers

→ To prevent union of egg and sperm

→ Use condoms, cervical caps and diaphragm.

(ii) Chemical methods.

→ Use of oral pills

-> There change hormonal balance of body so that eggs are not released.

-> May have side effects.

(iii) Intrauterine contraceptive device (IUCD)

-> Copper -T or loop is placed in uterus to prevent pregnancy.

(iv) Surgical methods

-> In male the vas deferences is blocked to prevent sperm transfer called vasectomy.

-> In females, the fallopian tube is blocked to prevent egg transfer called tubectomy.