

**Class X Science**  
**How do Organisms Reproduce**

**Asexual Reproduction in Plants**

- Spore formation → eg. Bacteria, fungi
- Budding → eg. Fungi (yeast)
- Fragmentation → eg. Algae, fungi
- Vegetative propagation

**(a) Natural method**

- By roots → eg. Sweet potato
- By stems → eg. Ginger, potato
- By leaves → eg. Bryophyllum

**(b) Artificial method**

- Cutting → eg. Rose
- Layering → eg. Strawberry, lemon
- Grafting → eg. Mango, rose.
- Micropropagation → eg. Orchids, dahlia

**Sexual Reproduction in Plants**

- Flower is the reproductive organ.
- It has four whorls – Calyx, Corolla, Androecium, Gynoecium.
- Calyx and corolla are accessory parts.
- Androecium - Male reproductive organ producing pollen grains.
- Gynoecium - Female reproductive organ having ovule (egg).
- Pollination – Transfer of pollens from anther to stigma for fertilization.
- Fertilization – Fusion of male and female gametes.
- Double fertilization (Triple fusion and syngamy) – unique events in the embryo sac of ovules.

**Asexual Reproduction in Animals**

- Fission
- (a) Binary fission** → eg. *Amoeba*
- (b) Multiple fission** → eg. *Plasmodium*
- Budding → eg. *Hydra*
- Regeneration → eg. *Planaria, Hydra*

**Sexual Reproduction (Human)**

- Human being is heterosexual.
- Reproductive system includes:
- (a) Primary sex organs:** Testes (males) and ovaries (females)
- (b) Secondary sex organs:** Genital ducts and glands (males) and fallopian tubes, uterus, vagina (females)
- Male sex hormone is testosterone and female sex hormones are progesterone and estrogen.
- Puberty is attained at the age of 13 – 14 years in males and 10 – 12 years in females.
- The zygote formed after fertilization develops into embryo which gets implanted in uterus.
- Placenta (a disc-like special tissue) develops between uterine wall and embryo for nourishment of the embryo.
- Gestation period in humans is 280 days.

**Reproductive Health**

- Birth control prevents unwanted pregnancies.
- (a) Barrier methods**
- (b) Chemical methods**
- (c) Intrauterine contraceptive device**
- (d) Surgical method**
- Sexually transmitted diseases (STD) are caused by bacteria, protozoa and viruses.
- AIDS is an incurable viral disease.