Points to Remember

Reproduction

❋ *Reproduction is defined as the process by which an organisms produces more of its own kind.*

❋ ***Types of Reproduction in plants*** *i) Vegetative ii) Asexual iii) Sexual*

Vegetative reproduction

New plantlets are formed from vegetative (somatic) cells, buds or organs of plants.

i) Leaves	In Bryophyllum small plants grow at the leaf notches.
ii) Stems	In strawberry, aerial weak stems touch the ground and give off adventitious roots & buds.
iii) Root	Tuberous roots (Asparagus and Sweet potato) can be used for vegetative propagation.
iv) Bulbils	Modified flower buds falls on ground & grow to a new plant. ***Ex:*** Agave.
v) Fragmentation	Breaking of the filament into many fragments is called fragmentation. ***Ex:*** Spirogyra
vi) Fission	Parent cell divides into two daughter cells and each develop into a new adult. ***Ex:***Amoeba
vii) Budding	Formation of a daughter individual from a small projection on parent body. ***Ex:*** Yeast
viii) Regeneration	Lost parts give rise to a complete new organism. ***Ex:*** *Hydra* and *Planaria*.

Asexual Reproduction

❋ The production of an offspring by a single parent without the formation and fusion of gametes.

❋ ***Spore formation - Ex :*** Fungi and Bacteria

Sexual Reproduction in Plants

It is the process in which two gametes (male and female) are fused to produce offspring of their own kind.

Parts of a Typical Flower

A flower consists of four whorls borne on a thalamus.

a) Calyx – consisting of sepals
b) Corolla – consisting of petals
} Non-essential /accessory whorls

c) Androecium – Male stamens – Filament + anther (pollen grains)

d) Gynoecium or pistil – Female carpels – Ovary + Style + Stigma

Process of Sexual Reproduction

1) Pollination

2) Fertilization

1. Pollination : The transfer of pollen grains from anther to stigma of a flower.

Types of Pollination :

i) Self-pollination (autogamy) : Takes place on the same plant. ***Ex:*** *Hibiscus*

ii) Cross pollination(allogamy) : Takes place on another plant of same species. ***Ex:*** Apples

Agents of Cross Pollination :

i) Pollination by wind - Anemophily – ***Ex :*** Grasses & some cacti

ii) Pollination by insects - Entomophily– ***Ex :*** Orchids, Jasmine

iii) Pollination by water - Hydrophily – ***Ex :*** Hydrilla, Vallisneria

iv) Pollination by Animals - Zoophily – ***Ex :*** Canna, Gladioli, Cotton

2) Fertilization in Plants : It stimulates the ovary to develop into fruit.

Sexual Reproduction in Human

Gametogenesis = **Spermatogenesis** + **Oogenesis**
(Formation of gametes with haploid cells) *(Formation of Sperm)* *(Formation of Ovum)*

	Primary Sex Organs	Secondary (or) Accessory Sex Organs
Male	***Testes***	Vas deferens, epididymis, seminal vesicle, prostate gland & penis
Female	***Ovary***	Fallopian tubes, uterus, cervix and vagina.

Primary reproductive organs

Testes - Male Reproductive Organ

Testes are oval shaped gland in scrotum.
Spermatogenesis : Takes place in seminiferous tubules.
★ Sertoli cells – Provide nutrients | ★ Leydig cells – Secretes testosterone
Human Sperm : It consists of head, a middle piece and tail.

Ovary - Female Reproductive Organ

Two almond shaped bodies, lying near the lateral end of fallopian tube.
Ovary – Cortex + Inner medulla
Membranes :Plasma membrane, Zona pellucida, Corona radiata
Puberty: Increase in sex hormone in male(testosterone) & females(estrogen, progesterone)

Menstrual Cycle-Process of Ovulation (Human Females)

❋ ***Menarche :*** Onset of puberty around 11-13 years of age.
❋ ***Menopause :*** Ceasing of puberty around 48-50 years of age.

Menstrual cycle : 4 phases – 28 days

1. Menstrual or Destructive Phase : 4th – 5th days
2. Follicular or Proliferative Phase : 6th – 13th days
3. Ovulatory Phase : 14th day
4. Luteal or Secretory Phase : 15th – 28th days

Fertilization to Foetal Development

❋ ***Fertilization***	It is internal and occurs in the oviduct of the female genital tract.
❋ ***Cleavage***	The first cleavage takes place about 30 hours after fertilization.
❋ ***Implantation***	Attachment of the blastocyst to the uterine wall.
❋ ***Gastrulation***	Transformation of blastula to gastrula & formation of primary germ layers.
❋ ***Organogenesis***	Establishment of germ layers to various organs of foetus.
❋ ***Formation of Placenta***	It is a disc shaped structure attached to uterine wall. Allows to exchange food, diffusion of oxygen, excretion of nitrogenous wastes and elimination of carbon dioxide.
❋ ***Pregnancy(Gestation)***	Gestation period - 280 days. Uterus expands 500 times.
❋ ***Parturition (Childbirth)***	Expulsion of young one from mother's uterus.
❋ ***Lactation***	Milk production after childbirth. First milk - Colostrum

Population Explosion & Family Planning

Population explosion - Sudden and rapid rise in the size of human population.
Contraception : Contraceptive methods used to prevent pregnancy.
1) Barrier methods : *Prevents sperm from meeting ovum.*
(a) Condom (b) *Diaphragm (Cervical cap)*
2) Hormonal methods : Pills or tablets to stop the release of egg from ovary.
3) Intra-Uterine Devices (IUDs) : 3 years – Lippe's loop and Copper T.
4) Surgical methods : Permanent birth control. Male – Vasectomy, Female – Tubectomy

Urinary Tract Infection (UTI)

1) Cystitis or Bladder infection 2) Kidney Infection 3) Asymptomatic Bacteriuria

Personal Hygiene

Hygiene is the practice of healthy living and personal cleanliness.
❋ *Body Hygiene* ❋ *Toilet Hygiene* ❋ *Menstrual and Napkin Hygiene*
★ **Menstrual Hygiene day - May 28**