X std -SCIENCE – BIOLOGY
MINIMUM STUDY MATERIAL
UNIT – 12
PLANT ANATOMY AND PLANT PHYSIOLOGY

I. Answer in a sentence

1. What is collateral vascular bundle?

Xylem lies towards the centre and phloem lies towards the periphery.

2. Where does the carbon that is used in photosynthesis come from?

Co_2 from atmosphere

3. What is the common step in aerobic and anaerobic pathway?

Glycolysis

4. Name the phenomenon by which carbohydrates are oxidized to release ethyl alcohol.

Anaerobic respiration or Fermentation.

II. Short answer questions

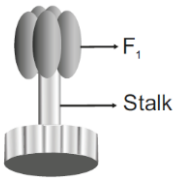
1. Give an account on vascular bundle of dicot stem.

- Conjoint, collateral, endarch and open.
- They are arranged in the form of a ring around the pith.

2. Write a short note on mesophyll.

- The tissue present between the upper and lower epidermis is called mesophyll.
- Dicot leaf: It is differentiated into Palisade parenchyma and Spongy parenchyma.
- Monocot leaf: Mesophyll is not differentiated into palisade and spongy parenchyma

3. Draw and label the structure of oxysomes.



4. Name the three basic tissues system in flowering plants.

- Dermal or Epidermal tissue system
- Ground tissue system
- Vascular tissue system

5. What is photosynthesis and where in a cell does it occur?

- Green plants, algae and chlorophyll containing bacteria utilize the energy from sunlight to synthesize their own food.
- It occurs in green parts of the plant such as leaves, stems and floral buds.

6. What is respiratory quotient?

- It is the ratio of volume of carbon dioxide liberated and the volume of oxygen consumed during respiration.
- Respiratory Quotient(RQ) = Volume of Co_2 liberated/Volume of O_2 consumed

7. Write the reaction for photosynthesis.

$$6CO_2 + 12H_2O \xrightarrow[\text{chlorophyll}]{\text{Light}} C_6H_{12}O_6 + 6H_2O + 6O_2\uparrow$$

Carbon dioxide + Water ⟶ Glucose + Water + Oxygen

III. Long answer questions

1. Differentiate the following

a) Monocot root and Dicot root

Tissues	Dicot Root	Monocot Root
Number of Xylem	Tetrarch	Polyarch
Cambium	Present(During secondary growth only)	Absent
Secondary Growth	Present	Absent
Pith	Absent	Present

b) Aerobic and Anaerobic respiration

Aerobic respiration	Anaerobic respiration
It takes place in higher plants and animals	It takes place in lower plants
Oxygen is utilized	Oxygen is not utilized
Glucose – complete oxidised	Glucose – incomplete oxidised
More energy is produced (38 ATP)	Less energy is produced (2 ATP)
End product- CO2, H2O and energy	End product – Ethonol, CO2 and energy

UNIT – 13
STRUCTURAL ORGANISATION OF ANIMALS

I. Answer in a sentence

1. Give the common name of the *Hirudinaria granulosa*.

Indian Cattle Leech.

2. How does leech respire?

Leech respire through the skin.

3. Write the dental formula of rabbit.

Dental formula is $(I\ \frac{2}{1}, C\ \frac{0}{0}, PM.\ \frac{3}{2}, M\ \frac{3}{3}.)$

4. How many pairs of testes are present in leech?

Eleven pairs of testes are present in leech.

5. How is diastema formed in rabbit?

The gap between incisors and premolar forms the diastema.

6. What organs are attached to the two bronchi?

Lungs are attached to the two bronchi.

7. Which organ acts as suction pump in leech?

Pharynx acts as suction pump in leech.

8. What does CNS stand for?

Central Nervous System

9. Why is the teeth of rabbit called heterodont?

As there are three kinds of teeth(Incisors, premolars and molars) in rabbit, so the dentition is called heterodont.

10. How does leech suck blood from the host?

The blood is sucked by pharynx.

II. Short answer questions

1. Why are the rings of cartilages found in trachea of rabbit?

- Tracheal walls are supported by rings of flexible cartilage.
- They help in the free passage of air.

2. List out the parasitic adaptations in leech.

- Blood is sucked by pharynx.
- The three jaws inside the mouth, causes a painless Y-shaped wound in the skin.
- The salivary glands produce hirudin.
- Blood is stored in the crop.

III. Long answer:

1. How is circulatory system designed in leech to compensate the heart structure?

- Leech circulation – haemocylic system
- No true blood vessels.
- Haemocylic channels are filled with blood like fluid.
- There are four longitudinal channels.
- All four channels are connected together posteriorly in the 26th segment.

2. How does locomotion take place in leech?

- Looping or crawling movement
- Swimming movement

(i) Looping or Crawling movement:

- It is brought about by the contraction and relaxation of muscles.
- The two suckers serve for attachment during movement on a substratum.

(ii) Swimming movement:

- Leeches swim very actively and perform undulating movements in water.

UNIT – 14

TRANSPORTATION IN PLANTS AND CIRCULATION IN ANIMALS

I. Answer in a word or sentence

1. Name two layered protective covering of human heart.

Pericardium.

2. What is the shape of RBC in human blood?

Disc or biconcave shaped.

3. Why is the colour of the blood red ?

Due to presence of respiratory pigment haemoglobin.

4. Which kind of cells are found in the lymph?

WBC.(White blood cells – Leucocytes)

5. Name the heart valve associated with the major arteries leaving the ventricles.

Pulmonary artery.

6. Mention the artery which supplies blood to the heart muscle.

Coronary artery

VI. Short answer questions

1. What causes the opening and closing of guard cells of stomata during transpiration?

- Due to the change in turgidity of the guard cells.
- When turgidity increases the stoma open.
- When the guard cells loose water, it becomes flaccid.

2. What is cohesion?

The force of attraction between molecules of water is called cohesion.

3. Trace the pathway followed by water molecules from the time it enters a plant root to the time it escapes into the atmosphere from a leaf.

- Root hair→ Cortical cells→ xylem→ Stem →Leaves →Atmosphere

4. What would happen to the leaves of a plant that transpires more water than its absorption in the roots?

- The plant dehydrates.
- Dehydration affects growth, photosynthesis etc.
- Wilting and dying of the plant.

5. Describe the structure and working of the human heart.

- The heart is enclosed in a double walled sac called pericardium.
- The human heart is four chambered.
- The two upper thin walled chambers of the heart are called auricle or atria.
- The two lower thick walled chambers are called ventricles.
- The arteries carry oxygenated blood except pulmonary artery.
- The veins are carry deoxygenated blood except pulmonary veins.

6. Why is the circulation in man referred to as double circulation?

When the blood circulates twice through the heart in one complete cycle it is called **double circulation.**

7. What are heart sounds? How are they produced?

- The **first sound LUBB** is of longer duration and closure of the tricuspid and bicuspid valves.
- The **second sound DUPP** is of a shorter duration and closure of semilunar valves.

8. What is the importance of valves in the heart?

Valves regulate the flow of blood in a single direction and prevent back flow of blood.

9. Who discovered Rh factor? Why was it named so?

Rh factor was discovered by **Landsteiner** and **Wiener** in 1940 in **Rhesus monkey.**

10. How are arteries and veins structurally different from one another?

Arteries	Veins
Distributing vessel	Collecting vessel
Pink in colour	Red in colour

Deep location	Outward location
Blood flow – high pressure	Blood flow – low pressure
Strong, thick and elastic	Weak, thin And elastic
Internal valves are absent	Internal valves are present

11 Why is the Sinoatrial node called the pacemaker of heart?

Sino-atrial node acts as the **'pacemaker'** of the heart because it is capable of initiating impulse which can stimulate the heart muscles to contract.

12. Differentiate between systemic circulation and pulmonary circulation.

Systematic circulation	Pulmonary circulation
It occurs between the heart and the entire body.	It occurs between the heart and the lungs.
It carries oxygenated blood from the heart to the body and deoxygenated blood from the body back to the heart.	It carries deoxygenated blood from the heart to the lungs and oxygenated blood from lungs to the heart.

13. The complete events of cardiac cycle last for 0.8 sec. What is the timing for each event?

- Each cardiac cycle lasts about **0.8 second**.

(a) Atrial systole: Contraction of auricles **(**0.1 sec)
(b) Ventricular systole: Contraction of ventricles **(**0.3 sec)
(c) Ventricular diastole: Relaxation of ventricles **(**0.4 sec)

III. Long answer:

1. What is transpiration? Give the importance of transpiration.

Transpiration is the evaporation of water in plants through stomata in the leaves.

Importance of Transpiration

- Creates transpirational pull for transport of water
- Supplies water for photosynthesis
- Transports minerals from soil to all parts of the plant
- Cools the surface of the leaves by evaporation.
- Keeps the cells turgid; hence, maintains their shape

2. Enumerate the functions of blood.

- Transport of respiratory gases (O2 and CO2).
- Transport of digested food materials.
- Transport of hormones.
- Transport of nitrogenous excretory products.
- Protection of the body and defense against diseases.
- It acts as buffer.
- Regulation of pH and body temperature.
- It maintains water balance.

UNIT – 15
NERVOUS SYSTEM

I. Short answer question

1. Define stimulus.

The changes in the environmental condition, that are detected by receptors present in the body.

2. Name the parts of the hind brain.

Pons, cerebellum and medulla oblongata.

3. What are the structures involved in the protection of brain?

- Duramater
- Arachnoid membrane
- Piamater

4. Give an example for conditioned reflexes.

Playing harmonium by striking a particular key seeing a music – note.

5. Which acts as a link between the nervous system and endocrine system?

Hypothalamus.

6. Define reflex arc.

The pathway taken by nerve impulse to accompalish reflex action is called reflex arc.

VII. Differentiate between

1. Voluntary and involuntary actions.

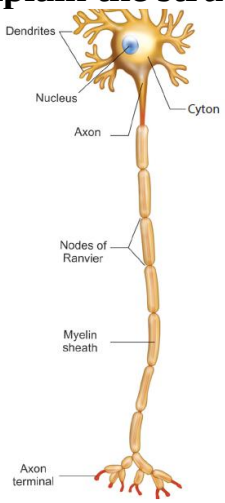
Voluntary action	Involuntary action
Under the control of our will	Not under our control
Controlled by the brain	Controlled by the spinal cord

2. Medullated and non-medullated nerve fibre.

Medullated nerve fibre	Non-medullated nerve fibre
Axon is covered with myelin sheath	Axon is not covered with myelin sheath
They form white matter	They form grey matter
It is also called myelinated nerve fibre	It is also called non – myelinated nerve fibre.

VIII. Long answer question

1. With a neat labelled diagram explain the structure of a neuron.



There are three basic parts :

- Cyton
- Axon

- Dendrites

(i) Cyton:

- Cyton is also called cell body.
- It has a central nucleus.

(ii) Axon:

- Axon is a single, elongated, slender projection.
- Axon is covered by myelin sheath.

(iii) Dendrites:

- They conduct nerve impulses towards the cyton.

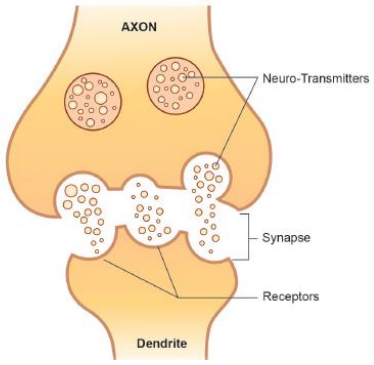
2. Illustrate the structure and functions of brain.

Structure	Functions
Cerebrum	Thinking, intelligence, memory and will power
Thalamus	Relay station
Hypthalamus	Control temperature, thirst, hunger and urination
Mid brain	Control visual and auditory
Cerebellum	Maintains body balance
Pons	Respiration and sleep cycle
Medulla oblangata	Regulates vomiting and salivation.

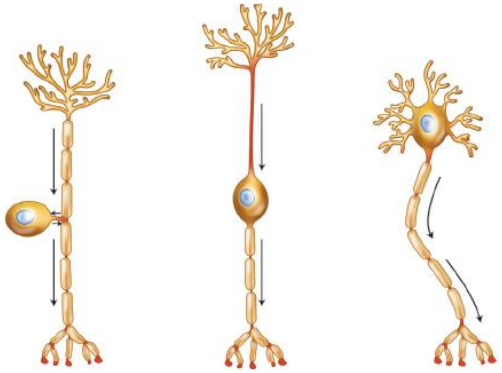
3. What will you do if someone pricks your hand with a needle? Elucidate the pathway of response with a neat labelled diagram.

Sensory neuron→ Spinal cord →Motor neurons →Muscles

4. How nerve impulses are transferred from one neuron to next neuron?



6. Classify neurons based on its structure.



- Unipolar neurons – Early embryo
- Bipolar neurons – Retina of eye
- Multipolar neurons – Cerebral cortex

UNIT – 16
PLANT AND ANIMAL HORMONEs

I. Answer in a word or sentence

1. Which hormone promotes the production of male flowers in Cucurbits?

Gibberellins.

2. Write the name of a synthetic auxin.

2,4 D (2,4 Dichlorophenoxy Acetic acid)

3. Which hormone induces parthenocarpy in tomatoes?

Gibberellins.

4. What is the hormone responsible for the secretion of milk in female after child birth?

- Prolactin, stimulates the production of milk.
- Oxytocin helps milk ejections.

5. Name the hormones which regulates water and mineral metabolism in man.

Antidiuretic or vasopressin

6. Which hormone is secreted during emergency situation in man?

(a)Epinephrine (Adrenaline)
(b)Norepinephrine(Noradrenaline).

7. Which gland secretes digestive enzymes and hormones?

- The pancreas secretes digestive enzymes and hormones.

8. Name the endocrine glands associated with kidneys.

Adrenal gland, is associated with kidneys.

VII Short answer questions

1. What are synthetic auxins? Give examples.

- Artificially synthesized auxins. Example: 2, 4 D (2,4 Dichlorophenoxy Acetic Acid).

2. What is bolting? How can it be induced artificially?

- Treatment of rosette plants with gibberellin induces sudden shoot elongation and flowering.
- This is called **bolting**.

3. Bring out any two physiological activities of abscisic acid

Physiological Effects:

- ABA promotes the process of **abscission** (separation of leaves, flowers and fruits from the branch).
- ABA **causes stomatal closure**.

4. What will you do to prevent leaf fall and fruit drop in plants? Support your answer with reason.

- Protect the tree from frost providing an overhead cover.
- The plant hormone ethylene controls fruit ripening, flower wilting and leaf fall.

5. What are chemical messengers?

- A chemical messenger is any compound that serves to transmit a message.
- A chemical messenger refers to hormones.

6. Write the differences between endocrine and exocrine gland.

Exocrine gland	Endocrine gland
Exocrine gland secretes juices, which plays a role in digestion.	Endocrine portion is made up of endocrine glands, which secrete hormones.

7. What is the role of parathormone?

- The parathormone regulates calcium and phosphorus metabolism in the body.
- They act on bone, kidney and intestine to maintain blood calcium levels.

9. Why are thyroid hormones refered as personality hormone?

- Essential for normal physical, mental and personality development .
- It is also known as **personality hormone**.

10. Which hormone requires iodine for its formation? What will happen if intake of iodine in our diet is low?

The hormones secreted by the thyroid gland are

a. Tri iodothyronine (T3)

b. Tetra iodothyronine or Thyroxine (T4)

If the intake of Iodine in our diet is low or due to the inadequate supply of iodine in our diet leads to the enlargement of thyroid gland, which protrudes, as swelling in the neck and is called as goitre.

VIII. Long answer questions

1. (a) Name the gaseous plant hormone. Describe its three different actions in plants. (b) Which hormone is known as stress hormone in plants ? Why?

(a)Ethylene is a **gaseous plant hormone**. It is a **growth inhibitor**.

- It **inhibits** the **elongation** of stem and root in dicots.
- **senescence** of leaves and flowers.
- **formation of abscission zone** in leaves, flowers and fruits.
- It **breaks the dormancy** of buds, seeds and storage organs.

(b)Abscisic acid (ABA)

- It is a **growth inhibitor**
- It increases tolerance of plants to various kinds of stress. So, it is also called as **stress hormone**.

3. Write the physiological effects of gibberellins.

Physiological effects of Gibberellins:

- Extraordinary **elongation of internode**. e.g. Corn and Pea.
- It induces sudden shoot elongation.
- **production of male flowers** in Cucurbits.
- **break dormancy** of potato tubers.
- formation of seedless fruit - **Parthenocarpic fruits**

4. Where are estrogens produced? What is the role of estrogens in the human body?

Estrogen is produced by the Graafian follicles of the ovary

Functions of estrogens

- changes that occur during puberty.
- It initiates the process of oogenesis.
- It promotes the development of secondary sexual characters (breast development, high pitched voice etc).

5. What are the conditions which occur due to lack of ADH and insulin? How are the conditions different from one another?

Lack of ADH:

- This deficiency disorder is called **Diabetes insipidus**.
- It reduces reabsorption of water
- increase in urine output (polyuria).

Lack of Insulin:

- The deficiency of insulin causes **Diabetes mellitus**.
- Increase in blood sugar level (Hyperglycemia).
- Excretion of excess glucose in the urine (Glycosuria).
- Frequent urination (Polyuria).
- Increased thirst (Polydipsia).
- Increase in appetite (Polyphagia).

UNIT – 17

REPRODUCTION IN PLANTS AND ANIMALS

I. Answer in a word or sentence

1. If one pollen grain produces two male gametes, how many pollen grains are needed to fertilize 10 ovules?

10 pollen grains are needed to fertilize 10 ovules.

2. In which part of the flower germination of pollen grains takes place?

Pollen grains reach the stigma and begin to germinate.

3. Name two organisms which reproduces through budding.

Yeast, Hydra.

4.Mention the function of endosperm.

Endosperm provides food to the developing embryo.

5. Name the hormone responsible for the vigorous contractions of the uterine muscles.

Oxytocin

6. What is the enzyme present in acrosome of sperm?

Hyaluronidase

7. When is World Menstrual Hygiene Day observed?

Every year May 28

8. What is the need for contraception ?

Contraception is used to prevent pregnancy.

9. Name the part of the human female reproductive system where the following occurs.

a. Fertilization - Oviduct **b. Implantation** – Uterus

VI. Short answer question

1. What will happen if you cut planaria into small fragments?

- Breaking of fragments of Planaria results into many fragments by cell division.

2. Why is vegetative propagation practiced for growing some type of plants?

- It has only mitotic division, no gametic fusion and daughter plants are genetically similar to the parent plant.

3. How does binary fission differ from multiple fission?

Binary fission	**Multiple fission**
Nucleus divides into two parts.	Nucleus divides into many parts.
It gives rise to new individuals.	It gives rise to many individuals.
Example – Amoeba.	Example – Plasmodium.

4. Define triple fusion.

- The fusion of one male gamete fused with secondary nucleus.**(**n+2n=3n)

5. Write the characteristics of insect pollinated flowers.

- flowers are brightly coloured, have smell and nectar.

6. Name the secondary sex organs in male

Vas deferens, Epididymis, seminal vesicle, prostate gland and penis.

7. What is colostrum? How is milk production hormonally regulated ?

- The first fluid which is released from the mammary gland after child birth is called as colostrum.
- Prolactin and oxytocin regulate milk production.

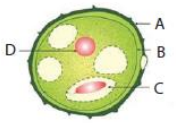
8 .How can menstrual hygiene be maintained during menstrual days?

- Sanitary pads should be changed regularly.
- Use of warm water to clean genitals
- Wearing loose clothing

9. How does developing embryo gets its nourishment inside the mother's body?

- The placenta allows the exchange of food materials, diffusion of oxygen, excretion of nitrogenous wastes and elimination of carbon dioxide.

10. Identify the parts A, B, C and D



A – Exine B – Intine C – Generative cell D – Vegetative nucleus

11. Write the events involved in the sexual reproduction of a flowering plant.

(i) pollination(ii) Fertilization

a. Discuss the first event and write the types.

Transfer of pollen grains from the anther to stigma of a flower is called pollination.

(i) self pollination (ii) cross pollination

b. Mention the advantages and the disadvantages of that event.

Advantages of self-pollination

- Flowers do not depend on agents for pollination.
- There is no wastage of pollen grains.

Disadvantages of self-pollination

- The seeds are less in numbers.
- The endosperm is minute.

Advantages of cross pollination

- More viable seeds are produced.

Disadvantages of cross-pollination

- More wastage of pollen grains
- Flowers depend on the external factors for pollination

12. Why are the human testes located outside the abdominal cavity? Name the pouch in which they are present?

- Several degrees lower than normal body temperature.

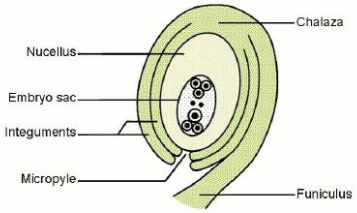
14. Why are family planning methods not adopted by all the people of our country?

- Illiteracy.
- It is in rural areas and not in villages.
- Door to door campaign to encourage families
- Poor economic status and poverty.
- poor family planning practices

VII. Long answer questions

1. With a neat labelled diagram describe the parts of a typical angiospermic ovule. Structure of the Ovule

- The main part of the ovule is the **nucellus.**
- **It** is enclosed by two integuments leaving an opening called as **micropyle**.
- The ovule is attached to the **funiculus**.
- **Chalaza** is the basal part.
- The embryo sac contains seven cells and the eight nuclei.
- Three cells at the **micropylar**
- Three cells at the **chalaza**
- The remaining two nuclei are called **polar nuclei** in the centre.



2. What are the phases of menstrual cycle? Indicate the changes in the ovary and uterus.

The menstrual cycle consists of 4 phases

- Menstrual or Destructive Phase
- Follicular or Proliferative Phase
- Ovulatory Phase
- Luteal or Secretory Phase

UNIT – 18
HEREDITY

V. Answer in a sentence

1. What is a cross in which inheritance of two pairs of contrasting characters are studied?

Dihybrid cross.

2. Name the conditions when both the alleles are identical?

Homozygous alleles.

3. A garden pea plant produces axial white flowers. Another of the same species produced terminal violet flowers. Identify the dominant trait?

(i) Axial position – dominant trait
(ii) White flowers – Recessive trait
(iii) Terminal position – recessive trait
(iv) Violet flower – dominant trait

4. What is the name given to the segments of DNA, which are responsible for the inheritance of a particular character?

Genes are the segments of DNA

5. Name the bond which binds the nucleotides in a DNA.

The hydrogen bonds, bind the nucleotides in a DNA.

VI. Short answers questions

1. Why did Mendel select pea plant for his experiments?

- It is naturally self- pollinating
- It has a short life span
- It is easy to cross pollinate.
- The flowers are bisexual.

2. What do you understand by the term phenotype and genotype?

- External expression of a particular trait is known as phenotype.
- The genetic expression of an organism is a genotype.

3. What are allosomes?

Out of 23 pairs of chromosomes, 22 pairs are autosomes and the 23rd pair is the allosome or sex chromosome.

4. What are Okazaki fragments?

The short segments of DNA are called Okazaki fragments.

5. Why is euploidy considered to be advantageous to both plants and animals?

Euploidy:

- **more than the usual number** of diploid (2n) chromosomes.
- Triploid plants and animals are typically sterile
- Tetraploid plants are increased fruit and flower size.

6. A pure tall plant (TT) is crossed with pure dwarf plant (tt), what would be the F1 and F2 generations? Explain.

- In F1 generation, all are tall plants.
- In F2 generation, genotype three tall and one dwarf. (TT:Tt:tt = 1:2:1) phenotype.
- Tall:Dwarf 3:1 (TT:Tt:tt)

UNIT – 19

ORIGIN AND EVOLUTION OF LIFE

I. Answer in a word or sentence

1. A human hand, a front leg of a cat, a front flipper of a whale and a bat's wing look dissimilar and adapted for different functions. What is the name given to these organs?

Homologous organs.

2. Which organism is considered to be the fossil bird?

Fossil bird Archaeopteryx.

3. What is the study of fossils called?

Palaentology.

VI Short answers questions

1. The degenerated wing of a kiwi is an acquired character. Why is it an acquired character?

- Kiwi do not have the need to fly that is why they do not have wings.
- The characters are response to environmental changes.
- The vestigial wings are so small under the bristly, hair like two branched feathers.
- So the degenerated wing of a kiwi is an acquired character.

2. Why is Archaeopteryx considered to be a connecting link?

- Archaeopteryx is the oldest known fossil bird. It is considered to be a connecting link between reptiles and birds.
- It had wings with feathers, like a bird. It had long tail, clawed digits and conical teeth, like a reptile.

3. Define Ethnobotany and write its importance.

- Ethnobotany is the **study of a region's plants** and their **practical uses** through the **traditional knowledge** of the local culture of people.

Importance of Ethnobotany

- It provides traditional uses of plant.
- It gives information about unknown and known useful plants.
- It gives information for the chemists, pharmacologists and practitioners of herbal medicine.
- Tribal communities utilize ethnomedicinal plant parts for the treatment of diseases

4. How can you determine the age of the fossils?

- The age of fossils is determined by radioactive elements present in it.
- The elements may be carbon, uranium, lead or potassium.

UNIT – 20

BREEDING AND BIOTECHNOLOGY

I. Answer in a sentence

1. Give the name of wheat variety having higher dietary fibre and protein.

Atlas 66.

2. Semi-dwarf varieties were introduced in rice. This was made possible by the presence of dwarfing gene in rice. Name this dwarfing gene.

The dwarfing gene is Sd.I.

3. Define genetic engineering.

- Genetic engineering is the manipulation and transfer of genes from one organism to another organisms to create a new DNA called as **recombinant DNA(rDNA)**.
- Genetic engineering is also called as **recombinant DNA technology.**

4. Name the types of stem cells.

- Embryonic stem cell
- Adult stem cell or somatic stem cell

5. What are transgenic organisms?

Plants or animals expressing a modified endogenous gene or a foreign gene are called transgenic organisms.

6. State the importance of biofertiliser.

- Increasing the harvest yields
- Improving soil structure
- Better water relation
- Economical and eco-frirendly

UNIT – 21
HEALTH AND DISEASES

VII. Answer in a sentence

1. What are psychotropic drugs ?

- **Psychotropic drugs** which acts on the brain and alter the behaviour, consciousness, power of thinking and perception.
- They are referred as **mood altering drugs**.

2. Mention the diseases caused by tobacco smoke.

Lung cancer, bronchitis, pulmonary tuberculosis, emphysema and hypoxia

3. What are the contributing factors for Obesity?

- Obesity is due to genetic factors, physical inactivity, overeating and endocrine factors.

4. What is adult onset diabetes?

- Insulin production by the pancreas is normal and target cells do not respond to insulin.

5. What is metastasis?

- The Cancerous cells migrate to distant parts of the body and affect new tissues and this process is called Metastasis.

6. How does insulin deficiency occur?

- Insulin deficiency occurs by the destruction of β-cells of the pancreas and blood glucose levels are increased (hyperglycemia).

VIII. Short answer questions

1. What are the various routes by which transmission of human immuno deficiency virus takes place ?

Transmission of HIV

- AIDS virus has been found in urine, tears, saliva, breast milk and vaginal secretions.

- HIV/AIDS is not transmitted by touch or any physical contact.
- It spreads through contact of body fluids or blood.
- HIV is transmitted generally by

(i) Sexual contact with infected person
(ii) Use of contaminated needles or syringes
(iii) By transfusion of contaminated / infected blood or blood products
(iv) From infected mother to her child through placenta.

2. How is a cancer cell different from a normal cell ?

- Cancer is an abnormal and uncontrolled division of cells that invade and destroy surrounding tissue forming a tumour or **neoplasm** (new growth).
- The cancerous cells migrate to distant parts of the body and affect lungs, bones, liver, skin and brain.

3. Differentiate between Type-1 and Type-2 diabetes mellitus

Factors	Type-1 Insulin dependent diabetes mellitus (IDDM)	Type-2 Non-insulin dependent diabetes mellitus (NIDDM)
Prevalence	10-20%	80-90%
Age of onset	Juvenile onset (< 20 years)	Maturity onset (>30 years)
Body weight	Normal or Underweight	Obese
Defect	Insulin deficiency due to destruction of β-cells	Target cells do respond to insulin
Treatment	Insulin administration is necessary	Can be controlled by diet, exercise and medicine

4. Why is a dietary restriction recommended for an obese individual ?

Diet Management:

- Low calorie, normal protein, vitamins and mineral, restricted carbohydrate and fat, high fibre diet can prevent overweight.
- Calorie restriction for weight reduction is safe and most effective.

Physical exercise:

- Exercise will be effective in causing weight loss.
- Meditation, yoga

5. What precautions can be taken for preventing heart diseases ?

Prevention and Control of Heart Disease

Diet management:

- Reduction in the intake of calories, low saturated fat and cholesterol rich food
- Diet rich in PUFA is essential.
- Increase in the intake of fibre diet, fruits and vegetables, protein, minerals and vitamin are required.

Physical activity:

- Regular exercise, walking and yoga

Addictive substance avoidance:

- Alcohol and smoking are to be avoided.

IX. Long answer questions

1. Suggest measures to overcome the problems of an alcoholic.

Education and counselling:

- Education and proper counselling will help the alcoholics to overcome their problems and stress

Physical activity:

- reading, music, sports, yoga and meditation.

Seeking help from parents and peer groups:

- To help and guidance from parents and peers.

Medical assistance:

- Psychologists and psychiatrists to get relieved from this condition

2.Changes in lifestyle is a risk factor for occurrence of cardiovascular diseases. Can it be modified? If yes, suggest measures for prevention.

The life style can be modified to prevent the cardiovascular diseases.

Measures for prevention.

- Do not smoke or use Tobacco.
- Do exercise for about 30 minutes.
- Eat a heart-healthy diet.
- Diet rich in polysaturated fatty acids (PUFA) is essential.
- Increase in the intake of fibre diet, fruits and vegetables
- Maintain a healthy weight.
- Get enough quality sleep.
- Manage stress.
- Control Blood pressure.

UNIT – 22
ENVIRONMENTAL MANAGEMENT

I. Answer in a sentence

1. What will happen if trees are cut down?

- Soil erosion occurs and ecological imbalance takes place, if trees are cut down.

2. What would happen if the habitat of wild animals is disturbed?

- If the habitat of wild animals disturbed, the biological diversity cannot be maintained and cannot promote the economic activities, which generates revenue to the government.

3. What are the agents of soil erosion?

- High velocity of wind, air currents, flowing water, land slide, human activities such as deforestation, farming and mining, and overgrazing by cattle are the agents of soil erosion.

4. Why fossil fuels are to be conserved?

- As the fossil fuels accumulation is very slow process and takes very long period, and in order to preserve them for future generation, the fossil fuels are to be conserved.

5. Solar energy is a renewable energy. How?

- Solar energy is renewable, free source of energy that is sustainable and totally inexhaustible.

6. How are e-wastes generated?

- E-wastes are generated from spoiled, out dated, non-repairable electrical and electronic devices.

VI. Short answer questions

1. What is the importance of rainwater harvesting?

- Overcome the rapid depletion of ground water levels.
- To Meet the increase demand of water.
- Reduces flood and soil erosion
- Water stored in ground is not contaminated by human and animal wastes and hence can be used for drinking purpose.

2. What are the advantages of using biogas?

Advantages of biogas

- It burns without smoke causes less pollution.
- An excellent way to get rid of organic wastes like bio-waste and sewage material.
- It is safe and convenient to use
- It can reduce the amount of greenhouse gases emitted.

3. What are the environmental effect caused by sewage?

- Sewage is the leading polluter of water resources in India.
- Different species of fishes are killed.
- It can reduce the amount of green house gases emitted.
- The contaminants can harm animals and damage the food chain.

4. What are the consequences of deforestation?

- Deforestation becomes a threat to the economy
- Loss of many forests.
- It gives rise to ecological problems like
  - floods,
  - drought,
  - soil erosion,
  - loss of wild life,
  - extinction of species,
  - imbalance of biogeochemical cycles,
  - alteration of climatic conditions and desertification.

VII. Long answer questions

1. How does rainwater harvesting structure recharge ground water?

- It is a technique of **collecting and storing rainwater** for future use.
- The main purpose of rainwater harvesting is to make the rainwater percolate under the ground so as to recharge '**groundwater level**'.

Methods of rainwater harvesting

(i) Roof top rainwater harvesting:

- Roof-tops are excellent **rain catchers**.

(ii) Recharge pit:

- the rainwater is first collected and is directed into the **percolation pits**
- After filtration the rainwater enters the **recharge pits or ground wells.**

(iii) Digging of tanks or lakes (Eris):

- It is one of the **traditional water harvesting system** in Tamil Nadu.

(iv) Ooranis:

- These are **small ponds** to collect rainwater.
- The water is used for various domestic purposes (drinking, washing and bathing).

2. How will you prevent soil erosion?

- Retain vegetation cover.
- Grazing should be controlled.
- Crop rotation and improve soil organic matter.
- Runoff water should be stored in the catchment.
- Reforestation.
- Wind speed can be controlled by planting trees .

3. What are the sources of solid wastes? How are solid wastes managed?

Sources of solid wastes:

- Solid wastes mainly include
  - municipal wastes,
  - hospital wastes,
  - industrial wastes and
  - e-wastes etc.

Methods of solid wastes disposal

(i) **Segregation**:

- separation of biodegradable and non biodegradable wastes.

(ii) **Sanitary landfill**:

- Solid wastes are dumped into low lying areas.
- The organic matter undergoes decomposition.

(iii) **Incineration**:

- It is the burning of non-biodegradable solid wastes (medical wastes)

(iv) **Composting**:

- Biodegradable matter of solid wastes is digested by microbial action or earthworms and converted into humus.

4. Enumerate the importance of forest.

- Forests are an important component of our environment
- Forests also economic development of our country.
- Forests are **renewable natural resource**.
- They provide wood, food, fodder, fibre and medicine.
- They act as carbon sink,
  - regulate climatic conditions,
  - increase rainfall,
  - reduce global warming,

- prevent natural hazards like flood and landslides,
- protect wildlife.
- maintaining the ecological balance.

5. What are the consequences of soil erosion?

- It has led to the increased pollution
- Decrease in fish species.
- Top soil is removed.
- Top soil quality is reduced.
- Use of artificial fertilizers.
- Disrupts ecosystem.

6. Why is the management of forest and wildlife resource considered as a challenging task?

- Due to deforestation, there is lack of oxygen.
- People kill animals, for making cloth.
- There is lack of public awareness.
- There is global warming and climate change.
- Water scarcity and changes in rainfall pattern.
- People kill animals and cut down trees, for economic benefit.
- Poaching.

7. What are the phases of menstrual cycle? Indicate the changes in the ovary and uterus.

Sl.No	Phase	Days	Changes in Ovary	Changes in Uterus
1.	Menstrual phase	4-5 days	Development of primary follicles	Breakdown of uterine
2.	Follicular phase	6^{th}-13^{th} day	Mature graffian follicle	Endometrium regenerates
3.	Ovulatory phase	14^{th} day	Release the ovum	Increase in endometrial thickness
4.	Luteal phase	15^{th} -28^{th} day	Corpus luteum developed	If fertilization does not occur corpus luteum degenerates

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