Padasalai's Telegram Groups!

(தலைப்பிற்கு கீழே உள்ள லிங்கை கிளிக் செய்து குழுவில் இணையவும்!)

- Padasalai's NEWS - Group
https://t.me/joinchat/NIfCqVRBNj9hhV4wu6_NqA

- Padasalai's Channel - Group
https://t.me/padasalaichannel

- Lesson Plan - Group
https://t.me/joinchat/NIfCqVWwo5iL-21gpzrXLw

- 12th Standard - Group
https://t.me/Padasalai_12th

- 11th Standard - Group
https://t.me/Padasalai_11th

- 10th Standard - Group
https://t.me/Padasalai_10th

- 9th Standard - Group
https://t.me/Padasalai_9th

- 6th to 8th Standard - Group
https://t.me/Padasalai_6to8

- 1st to 5th Standard - Group
https://t.me/Padasalai_1to5

- TET - Group
https://t.me/Padasalai_TET

- PGTRB - Group
https://t.me/Padasalai_PGTRB

- TNPSC - Group
https://t.me/Padasalai_TNPSC

MINIMUM LEARNING MATERIAL

10

SCIENCE

PREPARED BY

V.ANTONY AROCKIA SELVAN M.Sc., M.Ed., PGDCA., MEDICAL CODER

PG ASST.IN BIOLOGY (9043957609)

G.K.VIDHYAA MANDIR MAT.HR.SEC.SCHOOL, KARUR.

LESSON – 12

I. Choose the correct answer

1. Casparian strips are present in the of the root.
a) Cortex b) pith c) pericycle d) endodermis
2. The endarch condition is the characteristic feature of
a) Root b) stem c) leaves d) flower
3. The xylem and phloem arranged side by side on same radius is called
a) Radial b) amphivasal c) conjoint d) None of these
4. Which is formed during anaerobic respiration
a) Carbohydrate b) Ethyl alcohol c)Acetyl CoA d) Pyruvate
5. Kreb's cycle takes place in
a) Chloroplast b) mitochondrial matrix
c) Stomata d) inner mitochondrial membrane
6. Oxygen is produced at what point during photosynthesis ?
a) when ATP is converted to ADP b) when CO_2 is fixed
c) when H_2O is splitted d) All of these

II. Fill in the blanks

1. Cortex lies between _____.
2. Xylem and phloem occurring on the same radius constitute a vascular bundle called _____.
3. Glycolysis takes place in _____.
4. The source of O_2 liberated in photosynthesis is _____.
5. _____is ATP factory of the cells

III. State whether the statements are true or false. Correct the false statement

1. Phloem tissue is involved in the transport of water in plant.
2. The waxy protective covering of a plant is called as cuticle.
3. In monocot stem cambium is present in between xylem and phloem.
4. Palisade parenchyma cells occur below upper epidermis in dicot root.
5. Mesophyll contains chlorophyll.
6. Anaerobic respiration produces more ATP than aerobic respiration.

IV. Match the following

1. Amphicribal	-	Dracaena
2. Cambium	-	Translocation of food
3. Amphivasal	-	Fern
4. Xylem	-	Secondary growth
5. Phloem	-	Conduction of water

V. Answer in a sentence

1. What is collateral vascular bundle?
2. Where does the carbon that is used in photosynthesis come from?
3. What is the common step in aerobic and anaerobic pathway?
4. Name the phenomenon by which carbohydrates are oxidized to release ethyl alcohol.

VI. Short answer questions

1. Draw and label the structure of oxysomes.
2. Name the three basic tissues system in flowering plants.
3. What is photosynthesis and where in a cell does it occur?
4. What is respiratory quotient?
5. Write the reaction for photosynthesis.

VII. Long answer questions

1. Differentiate the following
a) Monocot root and Dicot root
b) Aerobic and Anaerobic respiration
2. Describe and name three stages of cellular respiration that aerobic organisms use to obtain energy from glucose.
3. How does the light dependent reaction differ from the light independent reaction? What are the end product and reactants in each? Where does each reaction occur within the chloroplast?

LESSON – 13

I. Choose the correct answer

1. In leech locomotion is performed by
a) Anterior sucker b) Posterior sucker c) Setae d) None of the above
2. The segments of leech are known as
a) Metameres (somites) b) Proglottids c) Strobila d) All the above
3. Pharyngeal ganglion in leech is a part of
a) Excretory system b) Nervous system
c) Reproductive system d) Respiratory system
4. The brain of leech lies above the
a) Mouth b) Buccal Cavity c) Pharynx d) Crop
5. The body of leech has
a) 23 segments b) 33 segments c) 38 segments d) 30 segments
6. Mammals are _____ animals.
a) Cold blooded b) Warm blooded c) Poikilothermic d) All the above
7. The animals which give birth to young ones are
a) Oviparous b) Viviparous c) Ovoviviparous d) All the above

II. Fill in the blanks

1. The posterior sucker is formed by the fusion of the _____ segments.
2. The existence of two sets of teeth in the life of an animal is called _____ dentition.
3. The anterior end of leech has a lobe-like structure called _____.
4. The blood sucking habit of leech is known as _____.
5. _____ separate nitrogenous waste from the blood in rabbit.
7. _____ spinal nerves are present in rabbit.

III. Identify whether the statements are true or false. Correct the false statement

1. An anticoagulant present in saliva of leech is called heparin.
2. The vas deferens serves to transport the ovum.
3. The rabbit has a third eyelid called tympanic membrane which is movable.
4. Diastema is a gap between premolar and molar teeth in rabbit.
5. The cerebral hemispheres of rabbit are connected by band of nerve tissue called corpora quadrigemina.

IV. Match columns I, II and III correctly

Organs	Membranous Covering	Location
Brain	pleura	abdominal cavity
Kidney	capsule	mediastinum
Heart	meninges	enclosed in thoracic cavity
Lungs	pericardium	cranial cavity

V. Answer in a sentence

1. Give the common name of the Hirudinaria granulosa.
2. Write the dental formula of rabbit.
3. How is diastema formed in rabbit?
4. How does leech suck blood from the host?

VI. Short answer questions

1. Why are the rings of cartilages found in trachea of rabbit?
2. List out the parasitic adaptations in leech.

VII. Long answer questions

1. How does locomotion take place in leech?
2. Explain the male reproductive system of rabbit with a labeled diagram.

LESSON – 14

I. Choose the correct answer

1. Active transport involves
a) movement of molecules from lower to higher concentration
b) expenditure of energy c) it is an uphill task d) all of the above
2. Water which is absorbed by roots is transported to aerial parts of the plant through
a) cortex b) epidermis c) phloem d) xylem
3. During transpiration there is loss of
a) carbon dioxide b) oxygen c) water d) none of the above
4. Root hairs are
a) cortical cell b) projection of epidermal cell c) unicellular d) both b and c
5. Which of the following process requires energy?
a) active transport b) diffusion c) osmosis d) all of them
6. The wall of human heart is made of
a) Endocardium b) Epicardium c) Myocardium d) All of the above
7. Which is the sequence of correct blood flow
a) ventricle - atrium - vein – arteries b) atrium - ventricle - veins - arteries
c) atrium - ventricle - arteries – vein d) ventricles - vein - atrium - arteries
8. A patient with blood group O was injured in an accident and has blood loss. Which blood group the doctor should effectively use for transfusion in this condition?
a) O group b) AB group c) A or B group d) all blood group
9. 'Heart of heart' is called
a) SA node b) AV node c) Purkinje fibres d) Bundle of His
10. Which one of the following regarding blood composition is correct
a) Plasma - Blood + Lymphocyte b) Serum - Blood + Fibrinogen
c) Lymph - Plasma + RBC + WBC d) Blood - Plasma + RBC+ WBC +Platelets

II. Fill in the blanks

1. _____ involves evaporative loss of water from aerial parts.
2. Water enters the root cell through a _____ plasma membrane.
3. Structures in roots that help to absorb water are _____.
4. Normal blood pressure is _____.
5. The normal human heartbeat rate is about _____ time per minute.

III. Match the following

Section I

1. Symplastic pathway	-	Leaf
2. Transpiration	-	Plasmodesmata
3. Osmosis	-	Pressure in xylem
4. Root Pressure	-	Pressure gradient

Section II

1. Leukemia	-	Thrombocytes
2. Platelets	-	Phagocyte
3. Monocytes	-	Decrease in leucocytes
4. Leucopenia	-	Blood Cancer
5. AB blood group	-	Allergic condition
6. O blood group	-	Inflammation
7. Eosinophil	-	Absence of antigen
8. Neutrophils	-	Absence of antibody

IV. State whether True or False. If false write the correct statement

1. The phloem is responsible for the translocation of food.
2. Plants lose water by the process of transpiration.
3. The form of sugar transported through the phloem is glucose.
4. In apoplastic movement the water travels through the cell membrane and enter the cell.
5. When guard cells lose water the stoma opens.
6. Initiation and stimulation of heart beat take place by nerves.
7. All veins carry deoxygenated blood.
8. WBC defend the body from bacterial and viral infections.
9. The closure of the mitral and tricuspid valves at the start of the ventricular systole produces the first sound 'LUBB'.

V. Answer in a word or sentence

1. Name two layered protective covering of human heart.
2. Why is the colour of the blood red ?

VI. Short answer questions

1. Why is the circulation in man referred to as double circulation?
2. What are heart sounds? How are they produced?

VII. Give reasons for the following statements

1. Minerals cannot be passively absorbed by the roots.
2. Minerals in the plants are not lost when the leaf falls.
3. Mature RBC in mammals do not have cell organelles.

VIII. Long answer questions

1. Why are leucocytes classified as granulocytes and agranulocytes? Name each cell and mention its functions.

LESSON – 15

I. Choose the correct answer

1. Bipolar neurons are found in
(a) retina of eye (b) cerebral cortex
(c) embryo (d) respiratory epithelium
2. Site for processing of vision, hearing, memory, speech, intelligence and thought is
(a) kidney (b) ear (c) brain (d) lungs
3. In reflex action, the reflex arc is formed by
(a) brain, spinal cord, muscle (b) receptor, muscle, spinal cord
(c) muscle, receptor, brain (d) receptor, spinal cord, muscle
4. Dendrites transmit impulse cell body and axon transmits impulse cell body.
(a) away from, away from (b) towards, away from
(c) towards,towards (d) away from, towards
5. The outer most of the three cranial meninges is
(a) arachnoid membrane (b) piamater (c) duramater (d) myelin sheath
6. There are pairs of cranial nerves and pairs of spinal nerves.
(a) 12, 31 (b) 31, 12 (c) 12, 13 (d) 12, 21
7. The neurons which carries impulse from the central nervous system to the muscle fibre.
(a) afferent neurons (b) association neuron
(c) efferent neuron (d) unipolar neuron
8. Which nervous band connects the two cerebral hemispheres of brain?
(a) thalamus (b) hypothalamus (c) corpus callosum (d) pons
9. Node of Ranvier is found in
(a) muscles (b) axons (c) dendrites (d) cyton
10. Vomiting centre is located in
(a) medulla oblongata (b) stomach (c) cerebrum (d) hypothalamus
11. Nerve cells do not possess
(a) neurilemma (b) sarcolemma (c) axon (d) dendrites
12. A person who met with an accident lost control of body temperature, water balance, and hunger. Which of the following part of brain is supposed to be? damaged?
(a) Medulla oblongata (b) cerebrum (c) pons (d) hypothalamus

II. Fill in the blanks

1. _____is the longest cell in our body.
2. Impulses travel rapidly in _____ neurons.
3. A change in the environment that causes an animal to react is called _____.
4. _____carries the impulse towards the cell body.
5. The two antagonistic component of autonomic nervous system are ____and_____ .
6. A neuron contains all cell organelles except _____.
7. _____maintains the constant pressure inside the cranium.
8. _____and_____ increases the surface area of cerebrum.
9. The part of human brain which acts as relay center is _____.

III. State whether true or false, if false write the correct statement

1. Dendrons are the longest fibres that conduct impulses away from the cell body.
2. Sympathetic nervous system is a part of central nervous system.
3. Hypothalamus is the thermoregulatory centre of human body.
4. Cerebrum controls the voluntary actions of our body.
5. In the central nervous system myelinated fibres form the white matter.
6. All the nerves in the body are covered and protected by meninges.
7. Cerebrospinal fluid provides nutrition to brain.
8. Reflex arc allows the rapid response of the body to a stimulus.
9. Pons helps in regulating respiration.

IV. Match the following

Column I	Column II
A. Nissil's granules	Forebrain
B. Hypothalamus	Peripheral Nervous system
C. Cerebellum	Cyton
D. Schwann cell	Hindbrain

V. Understand the assertion statement.

Justify the reason given and choose the correct choice
a. Assertion is correct and reason is wrong
b. Reason is correct and the assertion is wrong
c. Both assertion and reason are correct
d. Both assertion and reason are wrong
1. Assertion: Cerebrospinal fluid is present throughout the central nervous system.
Reason: Cerebrospinal fluid has no such functions.
2. Assertion: Corpus callosum is present in space between the duramater and piamater.
Reason: It serves to maintain the constant intracranial pressure.

VI. Short answer questions

1. Define stimulus.
2. Which acts as a link between the nervous system and endocrine system?
3. Define reflex arc.

VII. Differentiate between

1. Voluntary and involuntary actions.

VIII. Long answer questions

1. With a neat labelled diagram explain the structure of a neuron.
2. Illustrate the structure and functions of brain.
3. Describe the structure of spinal cord.

LESSON – 16

I.Choose the correct answer

1. Gibberellins cause:
a) Shortening of genetically tall plants b) Elongation of dwarf plants
c) Promotion of rooting d) Yellowing of young leaves
2. The hormone which has positive effect on apical dominance is:
a) Cytokinin b) Auxin c) Gibberellin d) Ethylene
3. Which one of the following hormones is naturally not found in plants:
a) 2, 4-D b) GA3 c) Gibberellin d) IAA
4. Avena coleoptile test was conducted by
a) Darwin b) N. Smit c) Paal d) F.W. Went
5. To increase the sugar production in sugarcanes they are sprayed with _____
a) Auxin b) Cytokinin c) Gibberellins d) Ethylene
6. LH is secreted by
a) Adrenal gland b) Thyroid gland c) Anterior pituitary d) Hypothalamus.
7. Identify the exocrine gland
a) Pituitary gland b) Adrenal gland c) Salivary gland d) Thyroid gland
8. Which organ acts as both exocrine gland as well as endocrine gland
a) Pancreas b) Kidney c) Liver d) Lungs
9. Which one is referred as “Master Gland”?
a) Pineal gland b) Pituitary gland c) Thyroid gland d) Adrenal gland

II.Fill in the blanks

1. _____ causes cell elongation, apical dominance and prevents abscission.
2. _____ is a gaseous hormone involved in abscission of organs and acceleration of fruit ripening.
3. _____ causes stomatal closure.
4. Gibberellins induce stem elongation in _____ plants.
5. The hormone which has negative effect on apical dominance is _____.
6. Calcium metabolism of the body is controlled by _____.
7. In the islets of Langerhans, beta cells secrete _____.
8. The growth and functions of thyroid gland is controlled by _____.
9. Decreased secretion of thyroid hormones in the children leads to _____.

III. a) Match Column I with Columns II and III

Column I	Column II	Column III
Auxin	Gibberella fujikuroi	Abscission
Ethylene	Coconut milk	Internodal elongatin
Abscisic acid	Coleoptile tip	Apical dominance
Cytokinin	Chloroplast	Ripening
Gibberellins	Fruits	Cell division

III. b) Match the following hormones with their deficiency states

Hormones		Disorders
a) Thyroxine	-	Acromegaly
b) Insulin	-	Tetany
c) Parathormone	-	Simple goitre
d) Growth hormone	-	Diabetes insipidus
e) ADH	-	Diabetes mellitus

IV.State whether True or false, If false write the correct statement

1. A plant hormone concerned with stimulation of cell division and promotion of nutrient mobilization is cytokinin.
2. Gibberellins cause parthenocarpy in tomato.
3. Ethylene retards senescence of leaves, flowers and fruits.
4. Exopthalmic goiter is due to the over secretion of thyroxine.
5. Pituitary gland is divided into four lobes.
6. Estrogen is secreted by corpus luteum.

V. Assertion and Reasoning

Direction: In each of the following questions a statement of assertion (A) is given and a corresponding statement of reason (R) is given just below it. Mark the correct statement as.
a. If both A and R are true and R is correct explanation of A
b. If both A and R are true but R is not the correct explanation of A
c. A is true but R is false d. Both A and R are false
1. Assertion: Application of cytokinin to marketed vegetables can keep them fresh for several days.
Reason: Cytokinins delay senescence of leaves and other organs by mobilisation of nutrients.
2. Assertion (A): Pituitary gland is referred as “Master gland”.
Reason (R): It controls the functioning of other endocrine glands.
3. Assertion (A): Diabetes mellitus increases the blood sugar levels.
Reason (R):Insulin decreases the blood sugar levels.

VI. Answer in a word or sentence

1. Write the name of a synthetic auxin.
2. What is the hormone responsible for the secretion of milk in female after child birth?
3. Which hormone is secreted during emergency situation in man?

VII. Short answer questions

1. What is bolting? How can it be induced artificially?
2. Write the differences between endocrine and exocrine gland.
3. What are the hormones secreted by posterior lobe of the pituitary gland? Mention the tissues on which they exert their effect.

VIII. Long answer questions

1. Describe an experiment which demonstrates that growth stimulating hormone is produced at the tip of coleoptile.
2. Write the physiological effects of gibberellins.
3. Where are estrogens produced? What is the role of estrogens in the human body?

LESSON – 17

I. Choose the correct answer

1. The plant which propagates with the help of its leaves is _____.
a) Onion b) Neem c) Ginger d) Bryophyllum
2. Asexual reproduction takes place through budding in _____ .
a) Amoeba b) Yeast c) Plasmodium d) Bacteria
3. Syngamy results in the formation of _____ .
a) Zoospores b) Conidia c) Zygote d) Chlamydospores
4. The essential parts of a flower are _____ .
a) Calyx and Corolla b) Calyx and Androecium
c) Corolla and Gynoecium d) Androecium and Gynoecium
5. Anemophilous flowers have _____ .
a) Sessile stigma b) Small smooth stigma
c) Colored flower d) Large feathery stigma
6. Male gametes in angiosperms are formed by the division of _____ .
a) Generative cell b) Vegetative cell
c) Microspore mother cell d) Microspore
7 What is true of gametes?
a) They are diploid b) They give rise to gonads
c) They produce hormones d) They are formed from gonads
8. A single highly coiled tube where sperms are stored, get concentrated and mature is known as
a) Epididymis b) Vasa efferentia c) Vas deferens d) Seminiferous tubules
9. The large elongated cells that provide nutrition to developing sperms are
a) Primary germ cells b) Sertoli cells c) Leydig cells d) Spermatogonia
10 Estrogen is secreted by
a) Anterior pituitary b) Primary follicle c) Graffian follicle d) Corpus luteum
11. Which one of the following is an IUCD?
a) Copper – T b) Oral pills c) Diaphragm d) Tubectomy

II. Fill in the blanks

1. The embryo sac in a typical dicot at the time of fertilization is _____ .
2. After fertilization the ovary develops into _____ .
3. Planaria reproduces asexually by _____ .
4. Fertilization is _____ in humans.
5. The implantation of the embryo occurs at about _____ day of fertilization.
6. _____ is the first secretion from the mammary gland after child birth.
7. Prolactin is a hormone produced by _____ .

III. (a) Match the following

Column 1	Column 2
Fission	Spirogyra
Budding	Amoeba
Fragmentation	Yeast

III. (b) Match the following terms with their respective meanings

a) Parturition - 1) Duration between pregnancy and birth
b) Gestation - 2) Attachment of zygote to endometrium
c) Ovulation - 3) Delivery of baby from uterus
d) Implantation - 4) Release of egg from Graafian follicle

IV. State whether the following statements are True or False. Correct the false statement

1. Stalk of the ovule is called pedicle.
2. Seeds are the product of asexual reproduction.
3. Yeast reproduces asexually by means of multiple fission.
4. The part of the pistil which serves as a receptive structure for the pollen is called as style.
5. Insect pollinated flowers are characterized by dry and smooth pollen.
6. Sex organs produce gametes which are diploid.
7. LH is secreted by the posterior pituitary.
8. Menstrual cycle ceases during pregnancy.
9. Surgical methods of contraception prevent gamete formation.
10. The increased level of estrogen and progesterone is responsible for menstruation.

V. Answer in a word or sentence

1. Mention the function of endosperm.
2. Name the hormone responsible for the vigorous contractions of the uterine muscles.
3. What is the enzyme present in acrosome of sperm?

VI. Short answer question

1. How does binary fission differ from multiple fission?
2. Define triple fusion.
3. What is colostrum? How milk production is hormonally regulated?
3. How does developing embryo gets its nourishment inside the mother's body?
4. Why are the human testes located outside the abdominal cavity? Name the pouch in which they are present.

VII. Long answer questions

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

LESSON – 18

I. Choose the correct answer

1. According to Mendel alleles have the following character
a) Pair of genes b) Responsible for character
c) Production of gametes d) Recessive factors
2. 9 : 3 : 3 : 1 ratio is due to
a) Segregation b) Crossing over
c) Independent assortment d) Recessiveness
3. The region of the chromosome where the spindle fibres get attached during cell division
a) Chromomere b) Centrosome c) Centromere d) Chromonema
4. The centromere is found at the centre of the _____ chromosome.
a) Telocentric b) Metacentric c) Sub-metacentric d) Acrocentric
5. The _____ units form the backbone of the DNA.
a) 5 carbon sugar b) Phosphate c) Nitrogenous bases d) Sugar phosphate
6. Okasaki fragments are joined together by _____.
a) Helicase b) DNA polymerase c) RNA primer d) DNA ligase
7. The number of chromosomes found in human beings are _____.
a) 22 pairs of autosomes and 1 pair of allosomes.
b) 22 autosomes and 1 allosome
c) 46 autosomes d) 46 pairs autosomes and 1 pair of allosomes.
8. The loss of one or more chromosome in a ploidy is called _____.
a) Tetraploidy b) Aneuploidy c) Euploidy d) polyploidy

II. Fill in the blanks

1. The pairs of contrasting character (traits) of Mendel are called _____.
2. Physical expression of a gene is called _____
3. The thin thread like structures found in the nucleus of each cell are called__.
4. DNA consists of two _____ chains
5. An inheritable change in the amount or the structure of a gene or a chromosome is called _____.

III. Identify whether the statement are True or False. Correct the false statement

1. A typical Mendelian dihybrid ratio of F2 generation is 3:1.
2. A recessive factor is altered by the presence of a dominant factor.
3. Each gamete has only one allele of a gene.
4. Hybrid is an offspring from a cross between genetically different parents.
5. Some of the chromosomes have an elongated knob-like appendage known as telomere.
6. New nucleotides are added and new complementary strand of DNA is formed with the help of enzyme DNA polymerase.
7. Down's syndrome is the genetic condition with 45 chromosomes.

IV. Match the following

1. Autosomes	-	Trisomy 21
2. Diploid condition	-	9:3:3:1
3. Allosome	-	22 pair of chromosome
4. Down's syndrome	-	2n
5. Dihybrid ratio	-	23rd pair of chromosome

V. Answer in a sentence

1. A garden pea plant produces axial white flowers. Another of the same species produced terminal violet flowers. Identify the dominant trait?
2. Name the bond which binds the nucleotides in a DNA.

VI. Short answers questions

1. What do you understand by the term phenotype and genotype?
2. What are allosomes?
3. What are Okazaki fragments?
4. Explain the structure of a chromosome.

VII. Long answer questions

1. Explain with an example the inheritance of dihybrid cross. How is it different from monohybrid cross?
2. How is the structure of DNA organised? What is the biological significance of DNA?
3. The sex of the new born child is a matter of chance and neither of the parents may be considered responsible for it. What would be the possible fusion of gametes to determine the sex of the child?

LESSON – 19

I. Choose the correct answer

1. Biogenetic law states that _____
a. Ontogeny and phylogeny go together
b. Ontogeny recapitulates phylogeny
c. Phylogeny recapitulates ontogeny
d. There is no relationship between phylogeny and ontogeny
2. The 'use and disuse theory' was proposed by _____.
a. Charles Darwin b. Ernst Haeckel
c. Jean Baptiste Lamarck d. Gregor Mendel
3. Paleontologists deal with
a. Embryological evidences b. Fossil evidences
c. Vestigial organ evidences d. All the above
4. The best way of direct dating fossils of recent origin is by
a. Radio-carbon method b. Uranium lead method
c. Potassium-argon method d. Both (a) and (c)
5. The term Ethnobotany was coined by
a. Khorana b. J.W. Harsbberger
c. Ronald Ross d. Hugo de Vries

II. Fill in the blanks

1. The characters developed by the animals during their life time, in response to the environmental changes are called _____.
2. The degenerated and non-functional organs found in an organism are called____.
3. The forelimbs of bat and human are examples of _____ organs.
4. The theory of natural selection for evolution was proposed by _____.

III. State true or false. Correct the false statements

1. The use and disuse theory of organs' was postulated by Charles Darwin.
2. The homologous organs look similar and perform similar functions but they have different origin and developmental pattern.
3. Birds have evolved from reptiles.

IV. Match the following

Column A	**Column B**
a) Atavism	caudal vertebrae and vermiform appendix
b) Vestigial organs	a forelimb of a cat and a bat's wing
c) Analogous organs	rudimentary tail and thick hair on the body
d) Homologous organs	a wing of a bat and a wing of an insect
e) Wood park	radiocarbon dating
f) W.F. Libby	Thiruvakkarai

V. Answer in a word or sentence

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

VI. Short answers questions

1. Why is Archaeopteryx considered to be a connecting link?
2. How can you determine the age of the fossils?

VII Long answer questions

1. Natural selection is a driving force for evolution-How?
2. How do you differentiate homologous organs from analogous organs?

LESSON – 20

I. Choose the correct answer

1. Which method of crop improvement can be practised by a farmer if he is inexperienced?
a. clonal selection b. mass selection c. pureline selection d. hybridisation
2. Pusa Komal is a disease resistant variety of _____.
a. sugarcane b. rice c. cow pea d. maize
3. Himgiri developed by hybridisation and selection for disease resistance against rust pathogens is a variety of _____.
a. chilli b. maize c. sugarcane d. wheat
4. The miracle rice which saved millions of lives and celebrated its 50th birthday is _____
a. IR 8 b. IR 24 c. Atomita 2 d. Ponni
5. Which of the following is used to produce products useful to humans by biotechnology techniques?
a. enzyme from organism b. live organism
c. vitamins d. both (a) and (b)
6. We can cut the DNA with the help of
a. scissors b. restriction endonucleases c. knife d. RNAase
7. rDNA is a
a. vector DNA b. circular DNA
c. recombinant of vector DNA and desired DNA d. satellite DNA
8. DNA fingerprinting is based on the principle of identifying ---------- sequences of DNA
a. single stranded b. mutated c. polymorphic d. repetitive
9. Organisms with modified endogenous gene or a foregin gene are also known as
(a) transgenic organisms (b) genetically modified
(c) mutated (d) both a and b
10. In a hexaploid wheat(2n = 6 x = 42) the haploid (n) and the basic(x) number of chromosomes respectively are
a. n = 7 and x = 21 b. n = 21 and x = 21
c. n = 7 and x = 7 d. n = 21 and x = 7

II. Fill in the blanks

1. Economically important crop plants with superior quality are raisedby____.
2. A protein rich wheat variety is _____.
3. _____is the chemical used for doubling the chromosomes.
4. The scientific process which produces crop plants enriched with desirable nutrients is called _____.
5. Rice normally grows well in alluvial soil, but _____ is a rice variety produced by mutation breeding that grows well in saline soil.
6. _____ technique made it possible to genetically engineer living organism.
7. Restriction endonucleases cut the DNA molecule at specific positions known as _____.
8. Similar DNA fingerprinting is obtained for _____.
9. _____ cells are undifferentiated mass of cells.
10. In gene cloning the DNA of interest is integrated in a _____.

III. State whether true or false. If false, write the correct statement

1. Raphano brassica is a man-made tetraploid produced by colchicine treatment.
2. The process of producing an organism with more than two sets of chromosome is called mutation.
3. A group of plants produced from a single plant through vegetative or asexual reproduction are called a pureline.
4. Iron fortified rice variety determines the protein quality of the cultivated plant
5. Golden rice is a hybrid.
6. Bt gene from bacteria can kill insects.
7. In vitro fertilisation means the fertilization done inside the body.
8. DNA fingerprinting technique was developed by Alec Jeffrey.
9. Molecular scissors refers to DNA ligases.

IV. Match the following

Column A	**Column B**
1. Sonalika	Phaseolus mungo
2. IR 8	Sugarcane
3. Saccharum	Semidwarf wheat
4. Mung No. 1	Ground nut
5. TMV – 2	Semi-dwarf Rice
6. Insulin	Bacillus thuringienesis
7. Bt toxin	Beta carotene
8. Golden rice	first hormone produced using rDNA technique

V. Understand the assertion statement, justify the reason given and choose thecorrect choice

a. Assertion is correct and reason is wrong
b. Reason is correct and the assertion is wrong
c. Both assertion and reason is correct
d. Both assertion and reason is wrong.
1. Assertion: Hybrid is superior than either of its parents.
Reason: Hybrid vigour is lost upon inbreeding.
2. Assertion: Colchicine reduces the chromosome number.
Reason: It promotes the movement of sister chromatids to the opposite poles.
3. Assertion: rDNA is superior over hybridisation techniques.
Reason: Desired genes are inserted without introducing the undesriablegenes in target organisms.

VI. Answer in a sentence
1. Give the name of wheat variety having higher dietary fibre and protein.
2. Define genetic engineering.
3. What are transgenic organisms?

VII. Short answers questions
1. Name two maize hybrids rich in amino acid lysine
2. Distinguish between
   a. somatic gene therapy and germ line gene therapy
   b. undifferentiated cells and differentiated cells
3. State the applications of DNA fingerprinting technique.
4. Differentiate between outbreeding and inbreeding.

VIII. Long answers questions

1. Describe mutation breeding with an example.
2. With a neat labelled diagram explain the techniques involved in gene cloning.
3. Discuss the importance of biotechnology in the field of medicine.

LESSON – 21

I. Choose the correct answer

1. Tobacco consumption is known to stimulate secretion of adrenaline. The component causing this could be
a) Nicotine b) Tannic acid c) Curcumin d) Leptin
2. World 'No Tobacco Day' is observed on
a) May 31 b) June 6 c) April 22 d) October 2
3. Cancer cells are more easily damaged by radiations than normal cells because they are
a) Different in structure b) Non-dividing
c) Mutated Cells d) Undergoing rapid divisionTEXN
4. Which type of cancer affects lymph nodes and spleen?
a) Carcinoma b) Sarcoma c) Leukemia d) Lymphoma
5. Excessive consumption of alcohol leads to
a) Loss of memory b) Cirrhosis of liver
c) State of hallucination d) Supression of brain function
6. Coronary heart disease is due to
a) Streptococci bacteria
b) Inflammation of pericardium
c)Weakening of heart valves
d) Insufficient blood supply to heart muscles
7. Cancer of the epithelial cells is called
a) Leukemia b) Sarcoma c) Carcinoma d) Lipoma
8. Metastasis is associated with
a) Malignant tumour b) Benign tumour
c) Both (a) and (b) d) Crown gall tumour
9. Polyphagia is a condition seen in
a) Obesity b) Diabetes mellitus c) Diabetes insipidus d) AIDS
10. Where does alcohol effect immediately after drinking?
a) Eyes b) Auditory region c) Liver d) Central nervous system

II. State whether True or False, if false write the correct statement

1. AIDS is an epidemic disease.
2. Cancer causing genes are called Oncogenes.
3. Obesity is characterized by tumour formation.
4. In leukemia both WBCs and RBCs increase in number.
5. Study of cause of disease is called etiology.
6. AIDS is not transmitted by contact with a patient's clothes.
7. Type 2 diabetes mellitus results due to insulin deficiency.
8. Carcinogens are cancer causing agents.
9. Nicotine is a narcotic drug.
10. Cirrhosis is associated with brain disorder.

III. Expand the following abbreviations

1. IDDM 2. HIV 3. BMI 4. AIDS 5. CHD 6. NIDDM

IV. Match the following

1. Sarcoma	-	Stomach cancer
2. Carcinoma	-	Excessive thirst
3. Polydipsia	-	Excessive hunger
4. Polyphagia	-	Lack of blood flow to heart muscle
5. Myocardial Infarction	-	Connective tissue cancer

V. Fill in the blanks
1. Cirrhosis is caused in liver due to excessive use of _____
2. A highly poisonous chemicals derived from tobacco is _____
3. Blood cancer is called _____.
4. Less response of a drug to a specific dose with repeated use is called _____
5. Insulin resistance is a condition in _____diabetes mellitus

VI. Analogy type questions. Identify the first words and their relationship and suggest a suitable word for the fourth blank
1. Communicable: AIDS
Non communicable: _____
2. Chemotherapy: Chemicals
Radiation therapy: _____
3. Hypertension: Hypercholesterolomia
Glycosuria: _____

VII. Answer in a sentence

1. Mention the diseases caused by tobacco smoke.
2. What is metastasis?
3. How does insulin deficiency occur?

VIII. Short answer questions

1. What are the various routes by which transmission of human immuno deficiency virus takes place ?
2. How is a cancer cell different from a normal cell ?
3. Differentiate between Type-1 and Type-2 diabetes mellitus
5. What precautions can be taken for preventing heart diseases ?

IX. Long answer questions

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

LESSON – 22

I. Fill in the blanks

1. Deforestation leads to _____ in rainfall.
2. Removal of soil particles from the land is called _____.
3. Chipko movement is initiated against _____ .
4. _____ is a biosphere reserve in Tamilnadu.
5. Tidal energy is _____ type of energy.
6. Coal, petroleum and natural gas are called _____ fuels.
7. _____ is the most commonly used fuel for the production of electricity.

II. State whether True or False. Correct the statements which are false

1. Biogas is a fossil fuel.
2. Planting trees increases the groundwater level.
3. Habitat destruction cause loss of wild life.
4. Nuclear energy is a renewable energy.
5. Overgrazing prevents soil erosion.
6. Poaching of wild animals is a legal act.
7. National park is a protected park.
8. Wild life protection act was established in 1972.

III. Match the following

1. Soil erosion	-	energy saving
2. Bio gas	-	acid rain
3. Natural gas	-	removal of vegetation
4. Green house gas	-	renewable energy
5. CFL bulbs	-	CO_2
6. Wind	-	non-renewable energy
7. Solid waste	-	lead and heavy metals

IV. Choose the correct answer

1. Which of the following is / are a fossil fuel?
i. Tar ii. Coal iii. Petroleum
a) i only b) i and ii c) ii and iii d) i, ii and iii
2. What are the steps will you adopt for better waste management?
a) reduce the amount of waste formed b) reuse the waste
c) recycle the waste d) all of the above

3. The gas released from vehicles exhaust are
i. carbon monoxide ii. Sulphur dioxide iii. Oxides of nitrogen
a) i and ii b) i and iii c) ii and iii d) i, ii and iii
4. Soil erosion can be prevented by
a) deforestation b) afforestion c) over growing d) removal of vegetation
5. A renewable source of energy is
a) petroleum b) coal c) nuclear fuel d) trees
6. Soil erosion is more where there is
a) no rain fall b) low rainfall c) rain fall is high d) none of these
7. An inexhaustible resources is
a) wind power b) soil fertility c) wild life d) all of the above
8. Common energy source in village is
a) electricity b) coal c) biogas d) wood and animal dung
9. Green house effect refers to
a) cooling of earth b) trapping of UV rays
c) cultivation of plants d) warming of earth
10. A cheap, conventional, commercial and inexhaustible source of energy is
a) hydropower b) solar energy c) wind energy. d) thermal energy
11. Global warming will cause
a) raise in level of oceans b) melting of glaciers
c) sinking of islands d) all of these
12. Which of the following statement is wrong with respect to wind energy
a) wind energy is a renewable energy
b) the blades of wind mill are operated with the help of electric motor
c) production of wind energy is pollution free
d) usage of wind energy can reduce the consumption of fossil fuels

V. Answer in a sentence

1. What would happen if the habitat of wild animals is disturbed?
2. What are the agents of soil erosion?
3. Solar energy is a renewable energy. How?

VI. Short answer questions

1. What is the importance of rainwater harvesting?
2. What are the consequences of deforestation?

VII. Long answer questions

1. How does rainwater harvesting structures recharge ground water?
2. Enumerate the importance of forest.
3. What are the consequences of soil erosion?
4. Why is the management of forest and wildlife resource considered as a challenging task?

LESSON – 23

I. Choose the best answer

1. Which software is used to create animation ?
a) Paint b) PDF c) MS Word d) Scratch
2. All files are stored in the _____
a) Folder b) box c) Pai d) scanner
3. Which is used to build scripts?
a) Script area b) Block palette c) stage d) sprite
4. Which is used to edit programs?
a) Inkscape b) script editor c) stage d) sprite
5. Where you will create category of blocks?
a) Block palette b) Block menu c) Script area d) sprite

II. Match the Following

1. Script Area	Type notes
2. Folder	Animation software
3. Scratch	Edit programs
4. Costume editor	Store files
5. Notepad	Build Scripts

III. Answer the following

1. What is Scratch?
2. Write a short note on editor and its types?