

Greenlawns High School

Technology Examination 2024-25

Subject: Biology

Std: X C

Date: 12/01/2025

Time: 2 Hours

Marks: 80

- Answers to this Paper must be written on the paper provided separately.
- You will not be allowed to write during first 15 minutes.
- This time is to be spent in reading the question paper.
- The time given at the head of this Paper is the time allowed for writing the answers.
- Section A is compulsory. Attempt any four questions from Section B.

SECTION A

(Attempt all questions from this Section.)

Question 1

(15)

Choose the correct answers to the questions from the given options.

i) As a result of linkage and crossing over

- a) Chromatids become chromosome
- b) Nuclear division begins
- c) Chromosomes become half in number
- d) Exchange of chromosome material takes place.

ii) In the cross $Pp \times Pp$, what percent of offspring would have the same phenotype as the parent?

- a) 25%
- b) 50%
- c) 75%
- d) 100%

iii) What is one benefit of transpiration for plants?

- a) It increases soil fertility.
- b) It cools leaf surface.
- c) It prevents distribution of water and minerals.
- d) It prevents nutrient absorption.

iv) The closely packed flattened sacs present inside the chloroplast are known as _____.

- a) Grana
- b) Stroma
- c) Thylakoids
- d) Fret

v) Phytohormone that stimulate cell division and cause dormant seeds to sprout is _____.

- a) Gibberellins
- b) Cytokinins
- c) Abscisic acid
- d) Indole acetic acid

vi) Assertion (A): Ventricles have thick muscular valve.

Reason (R): Ventricles have to pump blood up to the farthest point in the body

- a) A is True, R is False.
- b) A is false, R is True.
- c) A and R both are True.
- d) A and R both are False.

vii) Which of the following statement is true for human female menstrual cycle?

- a) During ovulatory phase, bleeding is caused due to rupturing of blood vessels.
- b) Follicular phase lasts for 3-5 days.
- c) During menstrual phase egg travels down to oviduct.
- d) Onset of menstruation is called as Menarche.

viii) Which radioactive material was carelessly discarded in Mayapuri, Delhi in 2010 leading to health hazards to the people exposed to this material?

- a) Iodine 131 b) Cobalt 60 d) Uranium 235 c) Radium 226

ix) Usage of spermicidal agents fall under which method of contraception?

- a) Hormonal method b) Barrier method
- b) Surgical method d) Intra-uterine method

x) What does "Survival of the fittest" imply in the context of natural selection?

- a) The strongest individual will survive.
- b) The largest organism will survive.
- c) All organisms have an equal chance of survival.
- d) The most adaptable individuals will survive and reproduce.

xi) Hypersecretion of adrenal cortex causes _____

- a) Cretinism b) Simple goitre
- c) Cushing's syndrome d) Addison's disease.

xii) Aqueous humour is present between _____.

- a) Lens and Retina b) Iris and Len.
- b) Cornea and Iris d) Cornea and Lens

Xiii) Assertion (A) : Renal medulla shows a dotted appearance.

Reason (R) : Renal medulla is composed of several conical pyramids

- a) A is True, R is False.
- b) A is false, R is True.
- c) A and R both are True.

d) A and R both are False.

xiv) The cerebral hemispheres in mammals are connected by:

- a) Corpus luteum
- b) Hypothalamus
- c) Pons
- d) Corpus callosum

xv) What is the primary function of the parasympathetic nervous system?

- a) Increase heart rate
- b) Promote digestion
- c) Dilate pupils
- d) Dryness of mouth

Question 2

i) Write the biological/technical terms for the following: (5)

- a) The yellow spot in the eye
- b) Low blood sugar
- c) Sperm duct
- d) Blood platelets
- e) Nerves for the nose.

ii) Complete the process of blood clotting by filling the blanks: (5)

Absorption of water by the root is by means of root hairs. A root hair contains a) _____ which has a b) _____ concentration of salts as compared to the outside soil water. This difference sets off c) _____ and the outside water diffuses into the root hair. From the cell bearing root hair, water continues to pass to adjoining cells one after another to finally enter the d) _____ vessels. The e) _____ acquired by the cells in the process also helps to push the water upwards.

iii) Arrange and rewrite the terms in each group in the correct order so as to be in logical sequence beginning with the term that is underlined. (5)

- a) Ovulation, Parturition, Fertilisation, Gestation, Implantation.
- b) Metaphase, Telophase, Prophase, Anaphase, Interphase.
- c) DNA, Chromosome, Nucleosome, Chromatin fibre.
- d) Proximal convoluted tubule, Glomerulus, Collecting duct, Distal convoluted tubule, Loop of Henle.
- e) Neanderthal, Homo habilis, Australopithecus, Homo erectus, Cro-Magnon Man.

iv) State whether true or false, if false rewrite the statement by correcting underlined word. (5)

- Calcium is an important mineral constituent of chlorophyll.
- Transpiration increases with increase in atmospheric pressure.
- Gibberellin is found in gaseous state.
- Sickle cell anemia is caused due to chromosome mutation.
- There are four nitrogen bases in DNA. Adenine, Guanine, Cytosine, Uracil.

v) Give below is a diagram of an internal structure of a human ear. Match the labelled structures with their correct function. (5)

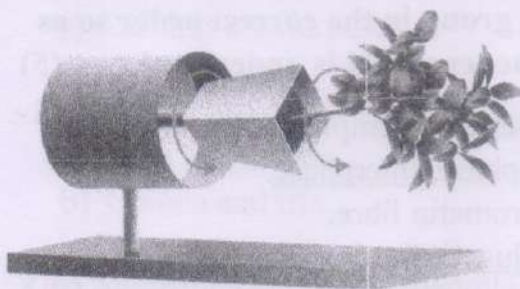
a. Transforms sound vibrations into nerve impulse
b. To transmit the vibration to the inner ear
c. To collect sound waves
d. Dynamic equilibrium
e. It vibrates to produce sound when sound waves strikes it

SECTION B

(Attempt any 4 questions from this Section.)

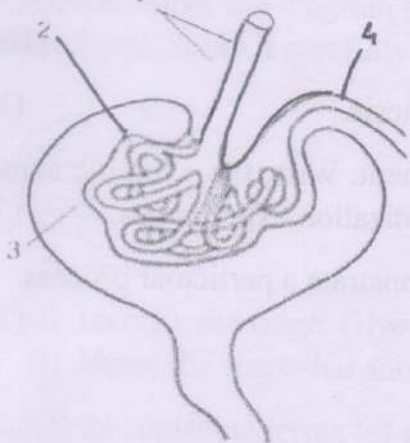
Question 3 (10)

- Differentiate between Light dependent phase and Light independent phase of photosynthesis based on where these reaction take place in chloroplast. (1)
- Study the diagram given below and answer the questions that follow: (2)

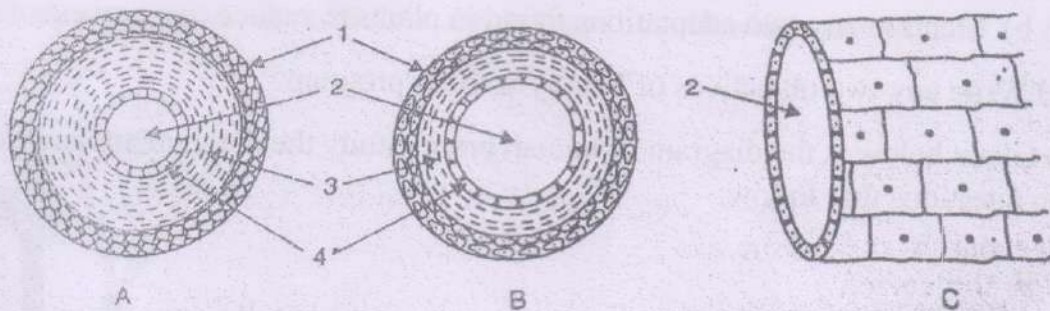


- Identify the device.
 - What is the use of this device?
- iii) Write any four effects of acid rain? (2)

- iv) Given below is a structure present in the kidney study the diagram and answer the questions that follow: (2)



- a) What is the structural difference between 1 and 4? Write the reason behind it.
 b) What is the name used for the parts 3 and 4 Collectively?
 v) The diagrams given below show cross section of three kinds of blood vessels. Study the diagrams answer the questions that follow. (3)



- a) Identify blood vessel B. Give reason to support your answer.
 b) Name the parts labelled as 3 and 4.
 c) Write any one function of C.

Question 4

(10)

- i) How forest contribute in bringing rain? (1)
 ii) Write the full form of NADP. Explain the process of polymerization which take place after Photosynthesis. (2)
 iii) Define: Osmoregulation. (2)
 Why is it necessary to maintain a normal osmotic concentration of the blood?

iv) What do you mean by thermal pollution? Write any one effect of thermal pollution. (2)

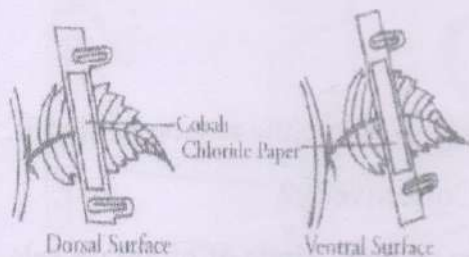
v) Draw a neat labelled diagram of human sperm cell. (3)

Question 5 (10)

i) Differentiate between Karyokinesis and Cytokinesis. (1)

ii) State the Mendel's law of Independent Assortment. Write the scientific name of the plant on which Mendel conducted his hybridization experiments. (2)

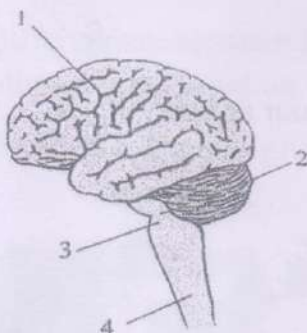
iii) Given below is an experimental set up to demonstrate a particular process. Study the same and answer the question that follow. (2)



- a) What would you observe in the experimental set-up after an hour?
- b) Mention any two adaptations found in plants to reduce this process.

iv) Write any two objectives of Family welfare program? (2)

v) Given below is the diagram of human brain. Study the diagram and answer the questions that follow: (3)

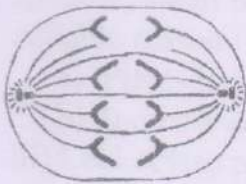


- a) Name the parts labelled as 2 and 3.
- b) Mention the difference in the arrangement of the nerve cells in parts 1 and 4.
- c) Write the function of 1.

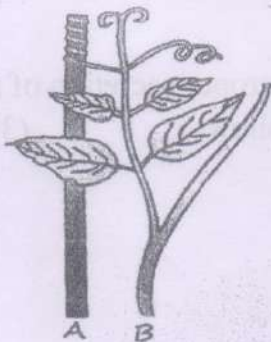
Question 6

(10)

- i) Define: Tonicity. (1)
- ii) Given below is a diagram representing a stage during mitotic cell division in animal cell. Study it carefully and answer the questions which follow. (2)



- a) Identify the stage. Give one reason in support of your answer.
b) Name the stage that should precede the one shown here.
- iii) Write statistical terms for the following: (2)
- a) Number of individuals per sq. km. at any given time.
b) Number of live births per 1000 people of population per year.
- iv) a) What is Synapse? (2)
b) Name the neurotransmitter. What is the role of neurotransmitter?
- v) Study the diagram given below and answer the following questions. (3)

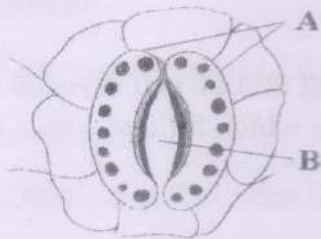


- a) Name the structure on plant B that is seen winding around Structure A.
b) Define the phenomenon depicted in this diagram.
c) Name the hormone that facilitates this growth process.

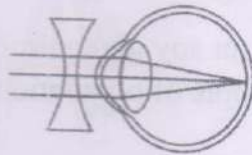
Question 7

(10)

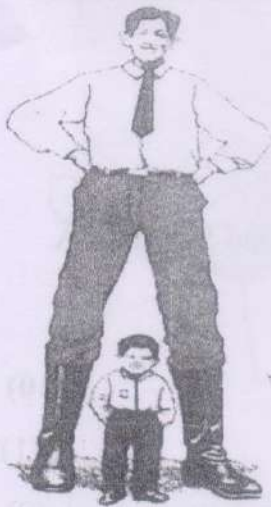
- i) Differentiate between Systole and Diastole. (1)
- ii) The diagram given below represents a structure found in leaf. Study it carefully and answer the questions which follow. (2)



- a) Identify the structure and Write the function of A.
- b) Define the physiological process that takes place through this structure.
- iii) Explain the two principles of Lamarck's theory. (2)
- iv) Given below is the correction of a certain eye defect. (2)



- a. What is the defect being corrected?
- b. What type of a lens is being used in the correction?
- v) The following picture shows conditions caused due to improper secretion of a Hormone. Study the picture and answer the questions that follow: (3)



- a) Name the hormone, whose improper secretion causes these conditions.
- b) Name the gland which secretes the above hormone.
- c) Write the full form of ACTH.

Question 8

(10)

- i) Placenta also acts as an endocrine gland – Explain. (1)
 - ii) How rate of photosynthesis will change in following conditions, write suitable reason for your answer: (2)
 - a) Plants having leaves with thick cuticle.
 - b) Increase in temperature.
 - iii) Leukocytes play important role in defence mechanism of human body – Justify the statement. (2)
 - iv) Write the location of the following glands in the human body: (2)
 - a) Adrenal gland
 - b) Thyroid gland
 - v) A haemophiliac male married normal woman. Draw the Punette square to show the probable progeny. (3)
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