

GREENLAWNS SCHOOL, WORLI
PRELIMINARY EXAMINATION: 2023-24
BIOLOGY

Std: X
Date: 17/01/2024

Marks: 80
Time: 2 hrs

Answers to this paper must be written on the paper provided separately. You will **not** be allowed to write during the 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**. The intended marks for questions or parts of questions are given in brackets [].

SECTION A

*(Attempt **all** questions from this Section)*

Question 1

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

[15]

(Do not copy the question, write the correct answers only.)

(i) Equatorial plane is formed in:

- (a) Anaphase
- (b) Metaphase
- (c) Telophase
- (d) Interphase

(ii) Match the items of column A with those in Column B and select the correct option:

Column A	Column B
(i) Genetics	(A) Chromosomes similar in size and shape
(ii) Autosomes	(B) The alternative forms of genes
(iii) Recessive genes	(C) Study of laws of inheritance of characters
(iv) Allele	(D) A gene that can express only when in a similar pair
(v) Homologous	(E) Chromosomes other than the pair of sex chromosomes

- (a) (i) – (C), (ii) – (E), (iii) – (D), (iv) – (A), (v) – (B)
- (b) (i) – (A), (ii) – (C), (iii) – (B), (iv) – (D), (v) – (E)
- (c) (i) – (C), (ii) – (E), (iii) – (D), (iv) – (B), (v) – (A)
- (d) (i) – (E), (ii) – (C), (iii) – (D), (iv) – (B), (v) – (A)

(iii) Which of the following is not the example of semi-permeable membrane:

- (a) Cellophane paper
- (b) Egg membrane
- (c) Animal bladder
- (d) Rubber sheet

- (iv) A student is investigating the effect of temperature on the rate of transpiration. Which environmental conditions should be kept constant during his investigation:

	Wind speed	Light intensity	Humidity	Temperature
(a)	✓	✓	✓	✓
(b)	✓	✓	✓	x
(c)	✓	✓	x	x
(d)	x	x	x	✓

- (v) Stroma is:
- (a) Site of photolysis of photosynthesis
 - (b) Site of photochemical phase of photosynthesis
 - (c) Site of light dependent phase of photosynthesis
 - (d) Site of light independent phase of photosynthesis
- (vi) Touch-me-not plant closes its leaves when touched. It is an example of:
- (a) Phototropism
 - (b) Thigmotropism
 - (c) Geotropism
 - (d) Hydrotropism
- (vii) Choose the correct order:
- (a) Artery → vein → arteriole → venule → capillary
 - (b) Artery → arteriole → capillary → venule → vein
 - (c) Artery → vein → capillary → venule → arteriole
 - (d) Artery → arteriole → capillary → vein → venule
- (viii) Pick the odd one out:
- (a) Malpighian capsule - ultrafiltration
 - (b) Urethra - micturition
 - (c) Hair pin – loop of Henle
 - (d) Urinary bladder – eliminates urine
- (ix) Peripheral nervous system consists of:
- (a) Cranial nerves
 - (b) System nerves
 - (c) Spinal nerves
 - (d) Both (a) and (c)

- (x) Which part of ear is called organ of hearing?
(a) Cochlea
(b) Eardrum
(c) Semicircular canals
(d) Vestibule
- (xi) Cretinism and Myxoedema are due to:
(a) Hyposecretion of thyroxine
(b) Hypersecretion of thyroxine
(c) Hyposecretion of growth hormone
(d) Hypersecretion of growth hormone
- (xii) Assertion (A): Only one sperm can fertilise an ovum.
Reason (R): During fertilisation, a sperm comes in contact with ovum and induces changes in the membrane that blocks the entry of additional sperms.
(a) Both A and R are true
(b) Both A and R are false
(c) A is true and R is false
(d) A is false and R is true
- (xiii) Tubectomy involves tying of :
(a) Fallopian tubes
(b) Vas deferens
(c) Scrotum
(d) Urethra
- (xiv) The concept of 'survival of the fittest' was put forward by:
(a) Gregor Mendel
(b) Jean De Baptiste Lamarck
(c) Charles Lamarck
(d) Charles Darwin
- (xv) The full form of CNG is:
(a) Combined Natural Gas
(b) Cleared Natural Gas
(c) Compressed Natural Gas
(d) Clarified Natural Gas

Question 2

(i) Name the following:

[5]

- (a) The tubular knot fitting like a cap on the upper surface of the testes.

- (b) Hormone secreted by corpus luteum.
- (c) The enzyme which converts fibrinogen to fibrin.
- (d) Cells having a single set of chromosomes.
- (e) Mutual force of attraction between the water molecules that binds them together.

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

- (a) SA node, Bundle of HIS, AV node, Purkinje fibres.
- (b) Uterus, Ovum, Graafian follicles, fallopian tube.
- (c) Palisade mesophyll, Spongy mesophyll, Cuticle, Lower epidermis, Upper epidermis.
- (d) Neanderthal man, Homo sapiens sapiens, Homo erectus, Homo habilis
- (e) Cornea, Lens, Aqueous humour, Vitreous humour, Retina, Conjunctiva.

(iii) Fill in the blanks with suitable words: [5]

The blood is somewhat thick fluid. Its colour is (a)..... when taken from an artery or (b) when taken from a veins. An average adult human contains (c)..... of blood by volume in his body. The blood is slightly (d)..... with a pH of (e)

(iv) Choose the odd one out from the following terms and name the category to which the others belong: [5]

- (a) Neutrophil, Monocyte, Thrombocyte, Lymphocyte.
- (b) Root pressure, Capillarity, Transpiration pull, Plasmolysis.
- (c) Ureter, Pons, Urinary bladder, Urethra.
- (d) Lacrimal gland, Thyroid gland, Adrenal gland, Pituitary gland.
- (e) Plastics, Glass, Paper, Styrofoam.

(v) Match the items given in Column I with the most appropriate ones in Column II and rewrite the correct matching pairs: [5]

Column I	Column II
(a) Adrenal medulla	1. Oxygenated blood
(b) Meiosis	2. Universal recipient
(c) Pulmonary vein	3. Adrenaline
(d) Cochlea	4. Universal donor
(e) AB blood group	5. Sperm
	6. Audio receptors
	7. Photo receptors
	8. Deoxygenated blood

SECTION B

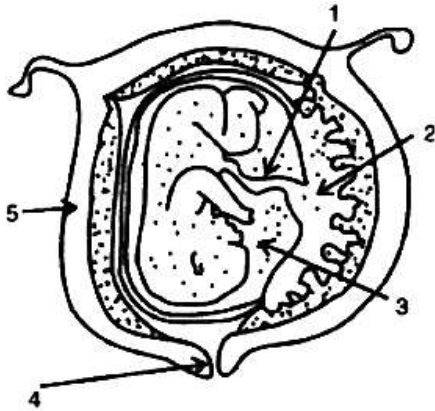
*(Attempt **any four** questions from this Section.)*

Question 3

(i) What is the location of hydathodes? [1]

- (ii) Differentiate between the following on the basis of what is given in brackets: [3]
- (a) Sensory and Motor neuron (function)
 - (b) Diabetes insipidus and diabetes mellitus (cause)
 - (c) Lymphocyte and basophil (appearance of cytoplasm)

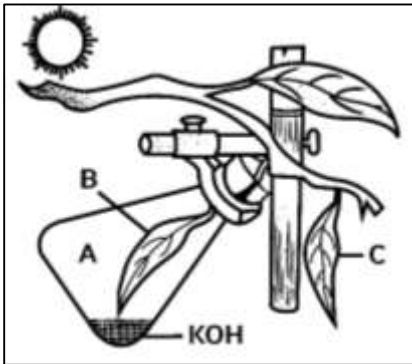
- (iii) The diagram given below is that of a developing human foetus in the womb. Study the same and then answer the questions that follow: [6]



- (a) Name the parts '1' to '5' indicated by guidelines.
- (b) What term is given to the period of development of the foetus in the womb?
- (c) Mention two functions of the parts labeled '2' other than its endocrine function.
- (d) What is the function of the part marked '3'?

Question 4

- (i) The figure given below represents an experiment to demonstrate a particular aspect of photosynthesis. The alphabet 'A' represents a certain condition inside the flask. [5]



- (a) What is the aim of the experiment?
- (b) Identify the special condition inside the flask.
- (c) Name an alternative chemical that can be used instead of KOH.
- (d) In what manner do the leaves 'B' and 'C' differ at the end of the starch test?
- (e) Represent the process of photosynthesis in the form of a balanced chemical equation.

- (ii) During a street fight between two individuals, mention the effects on the following [2]
organs by the autonomous nervous system in the table given below (one has been done for you as an example):

Organ	Sympathetic system	Parasympathetic system
e.g. Lungs	Dilates bronchi and bronchioles	Constricts bronchi and bronchioles
(a) Pupil of the eye		
(b) Salivary gland		

- (iii) Mention the characteristics of Australopithecus with regards to: [2]
 (a) Bipedalism
 (b) Forehead and brow ridges
- (iv) Define mortality. [1]

Question 5

- (i) The figure given below represents a kind of pollution. Study the figure and answer the following questions: [4]

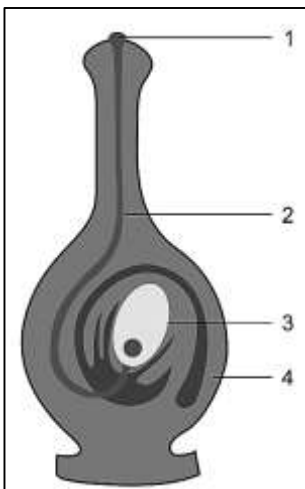


- (a) State any two sources of this pollution.
 (b) What are the effects of this kind of pollution?
 (c) Mention one way to stop this pollution.

- (ii) Define the following terms: [3]
 (a) Mutation
 (b) Demography
 (c) Micturition
- (iii) Draw a neat and labelled diagram of the structural and functional unit of the nervous system. [3]

Question 6

- (i) The diagram given alongside shows a type of tropism. Study the same and answer the questions that follow: [5]



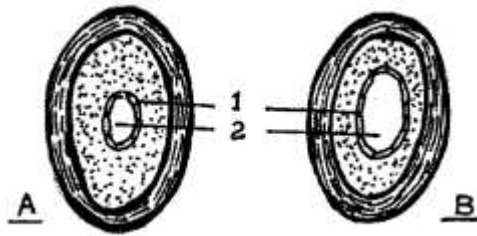
- (a) Name and define the type of tropism shown in the diagram.
 (b) Label the guidelines (1) to (4).
 (c) Name two effective stimulants that help in the growth of part (2).
 (d) Name two groups of plants where part (2) grows towards gametophyte with the help of the stimulants mentioned in (c).

(ii) Carry out monohybrid cross for the flower position character of garden pea plant as studied by Mendel. Also state the phenotype and genotype of F₂ generation. [2]

(iii) Draw a neat and labelled diagram for correction of Myopia. [3]

Question 7

(i) The diagrams given below show the cross section of two kinds of blood vessels: [5]



- (a) Identify the blood vessels A and B. Give a reason in each case to support your answer.
(b) Name the parts numbered 1 and 2.
(c) When are the sounds “LUBB” and “DUP” produced during a heartbeat?

(ii) Give biological reasons for the following: [3]

- (a) Insulin is injected into the body of a highly diabetic patient and is not given orally.
(b) Raisins swell up when kept in water.
(c) Sleeping under a tree at night is not advisable.

(iii) Give any two functions of Gibberellins in regulating the growth of plants. [2]

Question 8

(i) Explain the term plasmolysis. Give one application of this phenomenon in our daily life. [2]

(ii) Mention one function of each of the following hormones: [2]

- (a) FSH
(b) Oxytocin

(iii) What are the problems faced due to population explosion. [2]

(iv) Mention any two major factors that accelerate the rate of transpiration. [2]

(v) Draw the diagram of metaphase stage of mitosis showing four chromosomes in an animal cell and label the events taking place in it. Also, mention the role of centrosome in mitosis. [2]
