



Class: XI

Date: 16/1/20

Max. Marks: 70

Duration:

3Hrs

General Instructions:-

1. There are a total of 27 questions and five sections in the question paper. All questions are compulsory.
2. Section A contains question numbers 1 to 5, multiple choice questions of one mark each. Section B contains question numbers 6 to 12, short answer type I questions of two marks each. Section C contains question numbers 13 to 21, short answer type II questions of three marks each. Section D contains question number 22 to 24, case-based short answer type questions of three marks each. Section E contains question numbers 25 to 27, long answer type questions of five marks each.
3. There is no overall choice in the question paper. However, internal choices are provided in one question of one mark, one question of two marks, two questions of three marks and all three questions of five marks. An examinee is to attempt any one of the questions out of the two given in the question paper with the same question number.
4. Wherever necessary, the diagrams drawn should be neat and properly labeled.

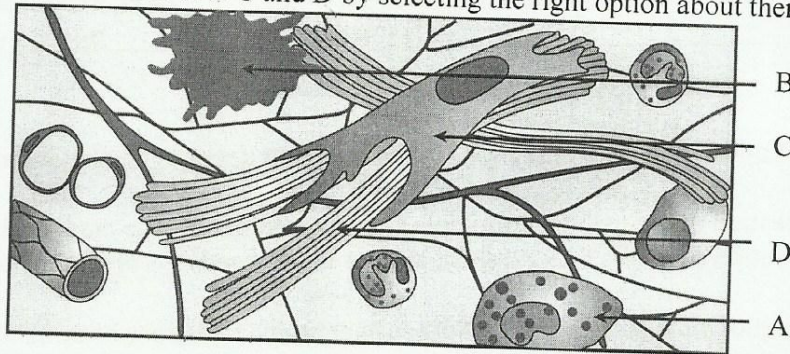
SECTION A

1. A plant cell has the potential to develop into a full plant. What will you call this property of a plant cell?
a) Tissue culture. b) Pluripotency c) Totipotency. d) Gene cloning
2. Find the sequence in which the following substances are involved in photosynthesis.
1. Glyceraldehyde phosphate
2. Glycerate 3 phosphate
3. Carbon dioxide
4. Glucose
a) 2-1-4-3 b) 3-1-2-4 c) 3-2-1-4 d) 1-2-4-3

OR

- How many molecules of Ribulose biphosphate are broken down to produce two molecules of glucose?
- a) 10 b) 12 c) 14 d) 18
3. A compound formed of sugar and nitrogen base joined by glycosidic bond is known as:
a) Purine b) nucleoside c) nucleotide d) glycoside
 4. Match the following and choose the correct answer from below:
A. Meristem I. Photosynthesis, Storage
B. Parenchyma II. Mechanical support
C. Collenchyma III. Actively dividing cells
D. Sclerenchyma IV. Stomata
E. Epidermal tissue V. Sclereids
- a) A-I, B-III, C-V, D-II, E-IV
b) A-III, B-I, C-II, D-V, E-IV
c) A-II, B-IV, C-V, D-I, E-III
d) A-V, B-IV, C-III, D-II, E-I

5. Given below is the diagrammatic sketch of a certain type of connective tissue. Identify the parts labelled A B C and D by selecting the right option about them.



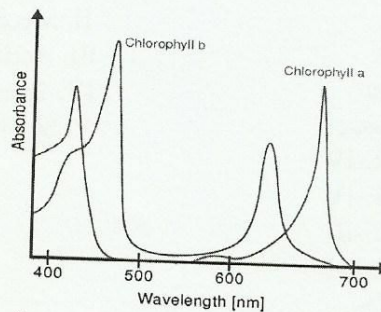
OPTION	PART A	PART B	PART C	PART D
a)	Macrophage	Fibroblast	Collagen fiber.	Mast cell.
b)	Mast cell.	Macrophage	Fibroblast	Collagen fiber.
c)	Macrophage	Collagen fiber.	Fibroblast	Mast cell.
d)	Mast cell.	Collagen fiber.	Fibroblast	Macrophage

SECTION B

- What do you mean by heterospory. Give its evolutionary significance in plant Kingdom
- Explain the different types of phyllotaxy with suitable examples.
- Draw a diagram of human duodenum and associated glands. Label the glands and their respective ducts pouring into the duodenum.
- Distinguish between metaphase of mitosis and metaphase 1 of meiosis.
- Mention two differences in the vascular bundle of sunflower and maize stem.

OR

- An anther has 1200 pollen grains. How many pollen mother cells ($2n$) must have been there to produce them?
 - Meiosis enables the conservation of specific chromosome number of each species even though the process, results in reduction of chromosome number. Comment.
- Name the most crucial enzyme found in root nodules for nitrogen fixation. Does it require a special pink colour pigment for its functioning? Elaborate.
 - The figure given below shows the action spectrum of photosynthesis superimposed on absorption spectrum of chlorophyll a.



Why is the colour of leaf green?

SECTION C

13. Trace the events in a muscle fibre from the time it receives the impulse through neuromuscular junction up to the contractile response.

OR

Structure and function are correlatable in living organisms. Can you justify this statement by taking plasma membrane as an example?

14. Explain in 2 to 3 lines each of the following terms with the help of examples taken from different plant tissue.

a. Differentiation. B) Dedifferentiation. C) Redifferentiation

15. Explain the different modes of transport of carbon dioxide and oxygen in blood.

OR

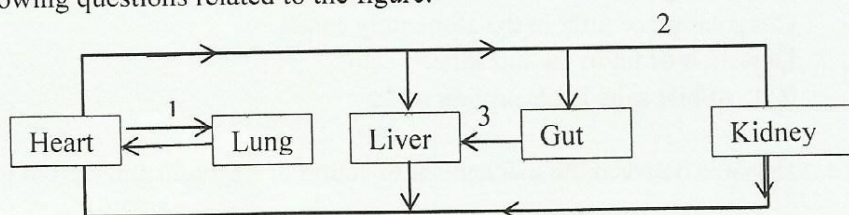
Proteins are made up of amino acids linked by peptide bonds. How is, then, one protein different from other? Explain with examples.

16. The glomerular filtrate in the loop of Henle gets concentrated in the descending and gets diluted in the ascending limbs. Explain
17. Respiratory pathway is believed to be a catabolic pathway. However, nature of TCA cycle is amphibolic. Explain.
18. Elaborate the process of secondary growth in a typical dicotyledonous stem with the help of diagram.
19. a) Give one word scientific term for the following
- a. Constructions on animal such as earthworm by repeated segments.
 - b. Blood filled cavity in arthropods.
 - c. Stinging organs of jellyfish.
 - d. Fluid filled body cavity lined with mesoderm
- b) Justify that earthworm is an annelid and not a nematode.
20. Name any two C_4 plants. What special anatomical features are displayed by the leaves of C_4 plants? How do they provide advantage over the structure of C_3 plants?
21. a) Write short note on plasticity in plants.
- b) Study the given table carefully and fill the blanks with appropriate hormones.

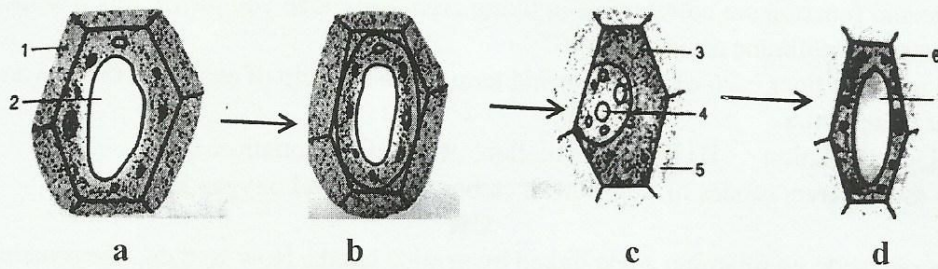
Phytohormone	Principal action
	Antagonistic to the action of abscisic acid
	Inhibit Apical dominance
	Development of seedling primordia
	Used as weedicide
Abscisic acid	Stress hormone

SECTION D

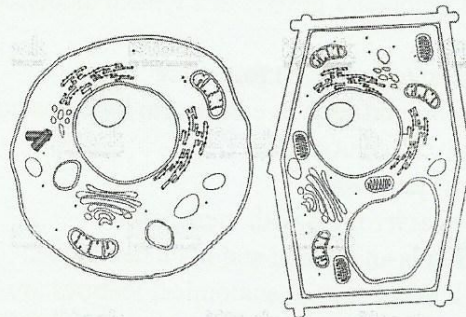
22. Study the given figure showing outline plan of blood circulation in human being. Answer the following questions related to the figure.



- a. Name the blood vessels marked 1, 2, 3 and 4
 b. Which one of the blood vessel contain the highest concentration of urea
23. Observe the given figure and answer the following questions



- a. What process has been depicted in in figure a to c and c to d.
 b. Write the equation of water potential for solution marked 7.
 c. In which figures turgor pressure will be zero?
24. In biology class, teacher showed slides of animal and plant cells, and asked following questions.



- a) Which one of the cell has cytoplasm and organelles only in the periphery of cells? What structure occupies the central part of such cell?
 b) What are dictyosomes?
 c) Which cell organelle is abundant in secretory cells? Name its components.

SECTION E

25. a) Distinguish between oxidative phosphorylation and oxidative decarboxylation.
 b) Give a schematic representation of Kerb's cycle.

OR

- a) Each plant or group of plants has some phylogenetic significance in relation to evolution. Cycus, one of the few living members of gymnosperms who is called as 'the relic of past.' Can you establish a phylogenetic relationship of Cycas with any other group of plants that justifies the above statement?
 b) Gametophyte is a dominant phase in the life cycle of bryophyte. Explain.

26. a) A person had roti and dal for his lunch. Trace the changes in those during its passage through the alimentary canal.

- b) Describe the following process in the body
- i. Coagulation of milk in the alimentary canal.
 - ii. Digestion of fat in the intestine.
 - iii. Role of bile salts in absorption of fat

OR

- a) Illustrate the difference between the mechanism of action of a protein and steroid hormone.

- b) Name the hormone that regulates each of the following and mention the source of it
- i. Heartbeat and blood pressure
 - ii. Secretion of growth hormone
 - iii. Maturation of Graafian follicle
 - iv. Rise in calcium level in blood

27. a) What is portal system?. Name the two portal systems found in the human body. Describe each one of them briefly.

b) Mark and label the conductive system in a diagrammatic presentation of heart.

OR

- a) 'Biological classification is a dynamic and ever evolving phenomenon which keeps changing with our understanding of life forms'. Justify the statement by taking any two examples.
- b) Cyanobacteria and heterotrophic bacteria have been clubbed together in Eubacteria of Kingdom Monera, as per five kingdom classification, even though the two are obviously different from each other. Is this grouping of these two types of taxa in the same Kingdom justified? Why? Why not?
