

M.M: 70
Time: 3 Hours

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, 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 two questions 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.

1. Which among the following has specialized tissue for conduction of water? (1)
 (i) Thallophyta (ii) Bryophyta (iii) Pteridophyta (iv) Gymnosperms
 (a) (i) and (ii) (b) (ii) and (iii)
 (c) (iii) and (iv) (d) (i) and (v)


OR

Which one is a true fish?

- (a) Jellyfish (b) Starfish
(c) Dogfish (d) Silverfish
2. In swampy areas like the Sunderbans in West Bengal plants bear special kind of roots called _____.
- (a) Prop roots (b) Stilt roots
(c) Pneumatophores (d) Haustoria

OR

Which of the following is not the function of epithelium?

- (a) Absorption
(c) Connection
- (b) Secretion
(d) Protection
3. Identify the type of chromosome from the given diagram. (1)
- (a) Acrocentric
(c) Subcentric
- (b) Metacentric
(d) Telocentric
- 
4. The ultimate acceptor of electron in cellular respiration in aerobic organism is _____. (1)
- (a) Oxygen
(c) Cytochrome
- (b) Hydrogen
(d) Glucose
5. A certain road accident patient with unknown blood needs immediate blood transfusion. His doctor friend at once offers his blood. What was the blood group of the donor? (1)
- (a) A
(c) O
- (b) B
(d) AB



Section B

- 6.. Name the invertebrate phylum in which animals' coelom is filled with blood. Write an example. (2)

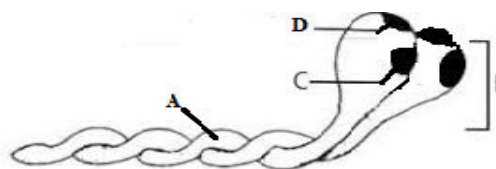
OR

Identify the phylum based on the clue given and write an example for each.

- (a) Animals exist in two body forms in their life cycle and has cnidoblasts.
 (b) Animals that have comb plates and exhibit bioluminescence.

7. Classify the members of the Kingdom Monera in to four categories based on their shape. (2)

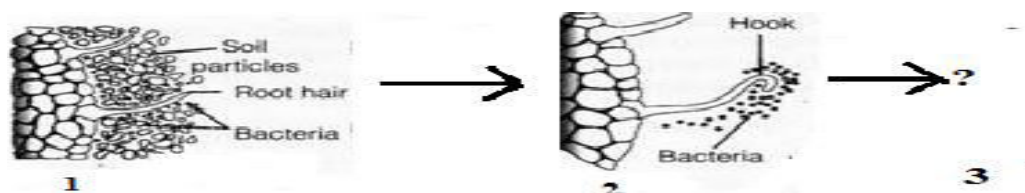
8. (a) Identify the type of contractile protein from the given diagram.
 (b) Write the significance of the part labelled as B.



9. Read the given statements and replace A, B, C and D with appropriate biological words. (2)
 The sex organs in Bryophytes are __A__. The male sex organ is called __B__. They produce __C__ antherozoids. The female sex organ called ____D____ is flask shaped and produces an egg.

10. (a) Which scientist modified the hypothesis of cell theory proposed by Schleiden and Schwann? (2)
 (b) What was the contribution of that scientist in cell theory?

11. The biology students were drawing the sequence of root nodule formation in leguminous plant in their notebooks as given below. Complete the diagram by drawing the next event that is labelled as 3. (2)



12. What is 'Law of Limiting Factor'? Explain it with an example. (2)

Section C

13. Organize the following in ascending order based on the volume of air. (3)
 a) Tidal volume
 b) Residual volume
 c) Inspiratory reserve volume
 d) Expiratory capacity

OR

State one difference between the following:

- a) Expiratory and inspiratory reserve volume
 b) Total lung capacity and vital capacity
 c) Occupational respiratory disorder and Emphysema

14. Name the type of epithelium that lines the Inner surface of (3)
 (a) Urinary bladder (b) Buccal cavity (c) Stomach
 (d) Trachea (e) Kidney Tubules (f) Female Oviduct
15. Describe the modifications of the stem. Give examples for each type of modification. (3)
16. (a) What is amitosis? (3)
 (b) How is it different from Mitosis?
 (c) Draw diagrams to depict amitosis process in a cell.
17. What are the cellular components of blood? Describe each of them based on structure and function. (3)
18. A cyclic process is occurring in C_3 plants, which is light dependent and needs O_2 . This process does not produce energy rather it consumes energy. (3)
 (a) Name the process?
 (b) Where does it occur?
 (c) What are the end products of this process?

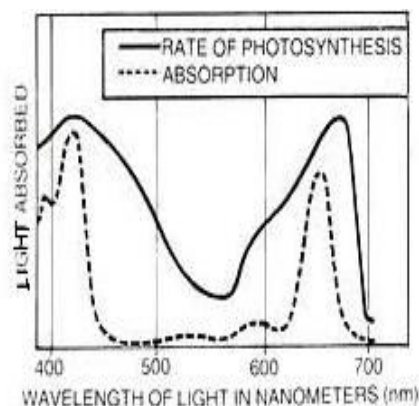
OR

Write any three major differences between plant growth regulators Absciscic acid and Gibberellins.

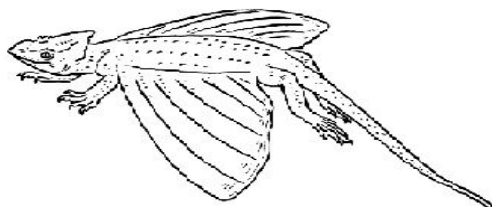
19. Draw the eukaryotic cell to show division of labour among the organelles of it. (3)
20. Yajurva has bread sandwiches and milk for his breakfast. Write the changes that would occur to the ingested food as it passes through the various parts of the alimentary canal. (3)
21. Explain the steps involved in the formation of concentrated urine by the nephrons. (3)

SECTION D

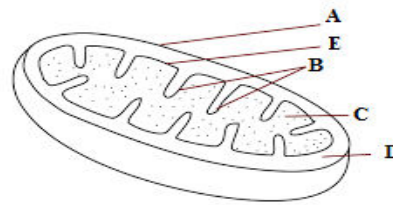
22. In the figure, the black line (upper) indicates action spectrum for photosynthesis and the dotted line (lower) indicates the absorption spectrum of chlorophyll a. (3)
 (a) What does the action spectrum indicate?
 (b) How can we derive an absorption spectrum for any substance?
 (c) If chlorophyll a is responsible for light reaction of photosynthesis, why do the action spectrum and absorption spectrum not overlap?



23. Identify the given picture of the animal. Compare it with the Pigeon bird and State any six differences between the both based on their external and internal morphological features. (3)



24. The figure of mitochondria is given with the parts labelled A to E.
- What is the significance of part labelled as B?
 - Show ATPase structure by drawing it on the given diagram.
 - Name the part labelled as D.

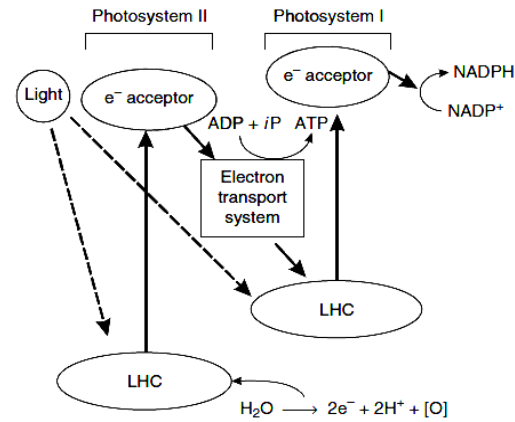


(3)

SECTION E

25. With the reference to the given diagram of Z scheme of light reaction answer the following questions.

- List the events that occur during light reaction of photosynthesis.
- What does LHC indicate?
- Write the significance of water in this reaction.
- Name the end products formed by light reaction?
- Why is this reaction referred as Z scheme?



(5)

OR

- What is cellular respiration?
- Glycolysis is step wise break down of sugar to pyruvic acid. Justify.
- Schematically represent Glycolysis pathway.

26. What is breathing? Explain the mechanism of breathing in human.

OR

- What is cardiac cycle?
- Explain the events of cardiac cycle that help the heart to function efficiently.

(5)

27. A taxonomist described the flower technically by using terms given below.

Bisexual, Bracteate, zygomorphic, valvate aestivation, epipetalous and hypogynous. Explain all these technical terms.

OR

The vertical section of a dicot leaf shows many layers of distinct cells.

- What is the characteristic feature of the outermost layer of dicot leaf?
- Draw the mesophyll region showing two types of parenchyma in it.
- Why do this region has two types of parenchyma cells.

(5)