



**INDIAN SCHOOL SOHAR**  
**FINAL EXAMINATION-2016**  
**BIOLOGY**

**3.16**  
**STD XI**

**Marks:70**  
**Time:3½Hrs**

**General Instructions:-**

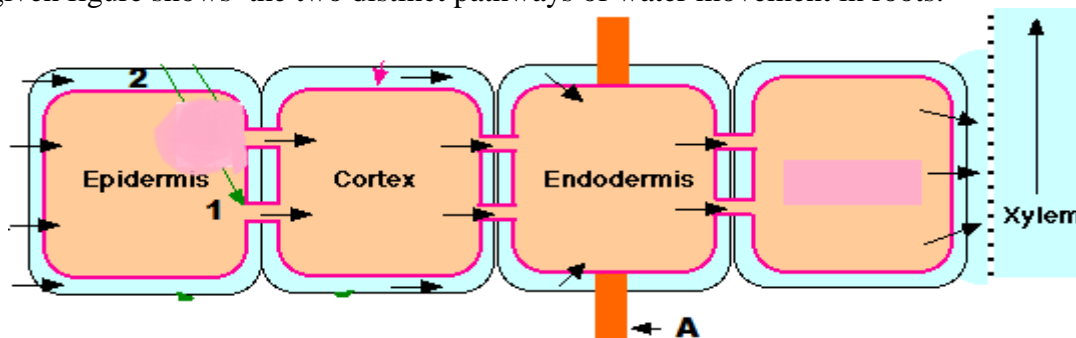
- This question paper consists of five sections **A, B, C, D&E**. Section A contains **5** questions of **1**mark each, section **B** is of **5** questions of **2** marks each, section C is of 10 questions of 3 marks each and section **D** is **3** questions of **5** marks each and section **E** is of **2** questions(OTB) of **5**marks each.
- All questions are compulsory.
- There is no overall choice. However, an internal choice is provided in one question of **2** marks, one question of **3** marks and all questions of **5** marks weightage. Attempt only **one** of the choices in such questions.
- Questions of section **A** are to be answered in one word or **one sentence** each, section **B** in approximately**20-30** words each, section **C** in **30-50** words each and section **D** in **80-120** words each.
- Wherever necessary, the diagrams drawn should be neat and properly labeled.

**SECTION-A**

1. Define guttation. (1)
2. Why does pure water have the maximum water potential? (1)
3. Starch reacts with iodine to give a blue colour, but cellulose does not give blue colour with iodine. Justify. (1)
4. G<sub>0</sub> phase called the quiescent stage of the cell cycle. Give reason. (1)
5. How are methanogens beneficial to human beings? (1)

**SECTION-B**

6. In all connective tissues except blood, the cells secrete fibres of structural proteins. Name the fibres and mention their role in the tissue. (2)
7. Based on the position of the centromere, how are chromosomes classified? (2)
8. The given figure shows the two distinct pathways of water movement in roots. (2)



- (a) Identify the pathway of water movement marked 1 and 2 in the given figure.
- (b) Label the part marked 'A'. How does water reach the xylem from 'A'?

9. List the properties of water that facilitates the transpiration driven ascent of sap. (2)

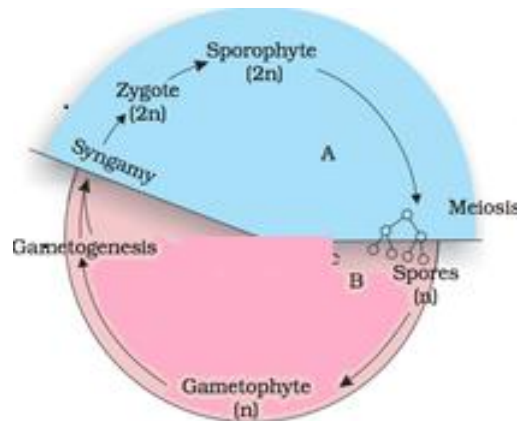
**OR**

The following are steps in the development of root nodule in leguminous plants. Arrange them in the correct sequence.

- (a) Bacteria gets modified into bacteroids.
  - (b) Infected thread carries the bacteria to the inner cortex.
  - (c) A mature nodule is complete with vascular tissues.
  - (d) Infection of root hair causes it to curl.
10. How do the following pairs of hormone function antagonistically? (2)
- (a) TCT and PTH
  - (b) Glucagon and insulin.

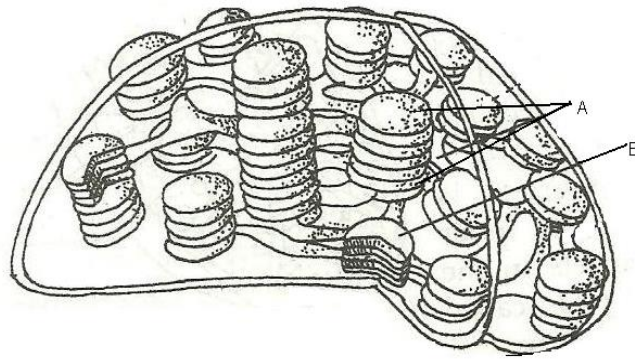
**SECTION-C**

11. Explain the following briefly: (3)
- (a) Metagenesis in Cnidarians
  - (b) Body in Mollusca
  - (c) Water vascular system in Echinodermata
12. (3)



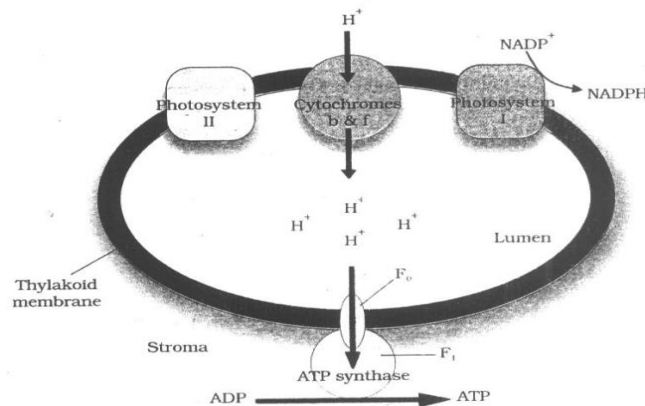
- (a) Identify the life cycle pattern and the group of organism exhibiting it.
  - (b) Briefly, explain how the gametophytic and sporophytic phases alternate with each other in the above life cycle?
  - (c) Fertilization in plants termed as double fertilization. Justify.
13. Based on the position of floral parts on the thalamus, how are flowers classified? (3)
14. A log (trunk part) of a felled temperate tree shows characteristic 25 autumn wood and 25 spring wood rings. What is the approximate age of this tree? How does periderm formation take place in a dicot stem? (3)
15. Cockroaches are dioecious animals. How does the male and female cockroach differ? (3)
16. Urine formation involves three main processes that take place in different parts of the nephron. Explain, briefly the role played by the tubules in urine formation. (3)
17. Nucleic acids serve as genetic material. Explain, the salient features of the B-DNA. (3)
18. (a) Give a diagrammatic representation of the sequence of processes which constitute the development of a cell of a higher plant. (3)
- (b) Write one process in which each of the following pairs of PGRs function antagonistically:
    - (i) GAs and ABA,
    - (ii) Auxin and cytokinin.

19. (a) Identify the organelle and label the parts marked A to D in the given figure. (3)  
 (b) Name the two organelles that are semi- autonomous and why are they considered to be so?



**OR**

Given below is a diagram showing chemiosmosis in plants.



- (a) How is the proton gradient caused across the membrane?  
 (b) What is its significance?  
 (c) How does oxidative phosphorylation differ from photophosphorylation?
20. Farmers often say that legumes are ‘hard on the soil’, meaning that they place a large demand (3)  
 on soil minerals. Nitrogen is so important for soil fertility, 79% by volume of the atmosphere  
 is nitrogen.
- (a) How is nitrogen fixed biologically?  
 (b) Root nodule acts as a site for symbiotic  $N_2$  fixation. Give the function of the biochemical  
 components present in the nodule.

### SECTION-D

21. (a) Give a brief account of the key features in the somatic cell division with the help of suitable  
 sketches. (5)  
 (b) Why is it essential to understand the significance of this division in the life of an organism?

**OR**

- (a) Explain, the Fluid mosaic model of plasma membrane as proposed by Singer and Nicolson.  
 (b) How are substances transported across the membrane?/ How does the fluid nature of the  
 membrane serve the cell?

22. (a) Schematically represent the photochemical phase of photosynthesis. (5)  
(b) Even though a very few cells in a C<sub>4</sub> plant carry out the biosynthetic pathway, yet they are highly productive. Why?

**OR**

- (a) Represent schematically the metabolic fate of Pyruvic acid the key product of Glycolysis, during aerobic respiration occurring in the mitochondrial matrix?  
(b) How is a proton gradient created in respiration ?/ Explain the role of oxygen and F<sub>0</sub>-F<sub>1</sub> particles in oxidative phosphorylation.
23. (a) Muscle fibre is the anatomical unit of muscle. Explain in sequence the changes that occur during a muscle contraction. (5)  
(b) How do muscles differ based on the myoglobin content? (two points)

**OR**

- (a) Neurons, the functional units of the neural system are excitable cells. How is imbalance of inorganic ions across the axon membrane maintained?  
(b) How is body balance and posture maintained in our body? (two points)

### **SECTION-E (OPEN TEXT MATERIAL)**

#### **Instructions for students:**

1. These questions are based on one of the themes provided to you by the board.
2. Please ensure that you get a copy of the relevant themes from the school to refer while answering the questions.
3. Each question carries 5 marks.
4. The suggested word limit for the questions is 100-120 words. However depending on the question, your answer could be shorter/ longer. It is important to present your views, arguments and conclusions logically, coherently in your own language; based on the concepts learnt during teaching learning sessions till class XI, their applicability with respect to open text material and your own awareness of the given theme.

### **THEME- 1: TAKE CARE !**

#### **Answer the following:**

24. Different people have different responses to stress .When you feel anxious or stressed, list the strategies that help you cope up with it. (5)
25. We humans are privileged to have a systematic body and its systems. Citing, examples from the text and from real life situation, explain the ways by which we can take good care of our body by adopting healthy habits. (5)

**\*\*\*\*\*THE END\*\*\*\*\***