



Roll No.	
Name	
Class & Section	

**APEEJAY COMMON ANNUAL EXAMINATION, 2019-20**

**BIOLOGY (044)**

**Time Allowed : 3.00 Hrs.**

**Class – XI**

**Maximum Marks : 70**

**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 (1+1+1).  
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.*

**SECTION-A**

1. The embryo sac of an angiosperm is made up of : (1)
  - (a) 7 cells and 7 nuclei
  - (b) 8 cells and 7 nuclei
  - (c) 7 cells and 8 nuclei
  - (d) 8 cells and 8 nuclei
2. Two common characters found in centipede, cockroach and crab are : (1)
  - (a) Jointed legs and chitinous exoskeleton
  - (b) Green glands and tracheae
  - (c) Book lungs and antennae
  - (d) Compound eyes and anal cerci

**OR**

A list of animals is given below. Identify the animals with open circulatory system and choose the correct answer:

- |                 |                   |
|-----------------|-------------------|
| (i) Nereis      | (ii) Cockroach    |
| (iii) Earthworm | (iv) Prawn        |
| (a) (i) and ii) | (b) (ii) and iv)  |
| (c) (ii) and m) | (d) (iii) and iv) |

3. Leg-haemoglobin helps in :

- |                       |  |
|-----------------------|--|
| (a) Nitrogen fixation | (b) Protecting Nitrogenase from O <sub>2</sub> |
| (c) Destroys bacteria | (d) Transport of food in plants                |

(1)

**OR**

The process in which water is lost in the form of liquid droplets :

- |                 |                   |
|-----------------|-------------------|
| (a) Guttation   | (b) Transpiration |
| (c) Evaporation | (d) Osmosis       |

4. Which of the following is true regarding glycolysis :

- (i) Takes place in cytosol
- (ii) Produces no ATP
- (iii) Has no connection with electron transport chain
- (iv) Reduces two molecules of NAD<sup>+</sup> for every glucose

(1)

Choose the correct option :

- |                  |                         |
|------------------|-------------------------|
| (a) Only (i)     | (b) (i), (ii) and (iii) |
| (c) (i) and (ii) | (d) none of these       |

5. Organic compounds which contain an amino group and an acidic group as substituents on the alpha carbon.

(1)

- |                   |                   |
|-------------------|-------------------|
| (a) Carbohydrates | (b) Proteins      |
| (c) Amino acids   | (d) Nulceic Acids |

## SECTION-B

6. Heterospory is the characteristic feature of the life of few Pteridophytes. (2)
- (a) State the evolutionary significance of this in the plant kingdom.
- (b) Which development led to this very significant step in evolution?
7. Why Mitosis is called equational cell division? Where does it occur?
8. After keeping a freshly collected Spirogyra filament in 10% sodium chloride solution, it is observed that protoplasm shrinks in size. (2)
- (a) Name the phenomenon occurring in the above case?
- (b) What will happen if filament is kept in distilled water?
9. Define dedifferentiation and redifferentiation. (2)
10. Explain the heart sounds produced during a cardiac cycle. (2)
11. Briefly explain the process of digestion of fats in the small intestine. (2)
12. The pituitary gland is divided anatomically into two parts. Name one hormone secreted by each of these parts and mention the function of each. (2)

OR

Name the hormones secreted by  $\alpha$ -cells and  $\beta$ -cells of the pancreases. How is glucose homeostasis in our blood maintained by these hormones?

## SECTION-C

13. Give a comparative account of the classes of Kingdom Fungi under the following :
- (a) Mode of nutrition
- (b) Mode of reproduction
- (c) Mycelium

OR

Name the three divisions of Algae and compare them on the basis of :

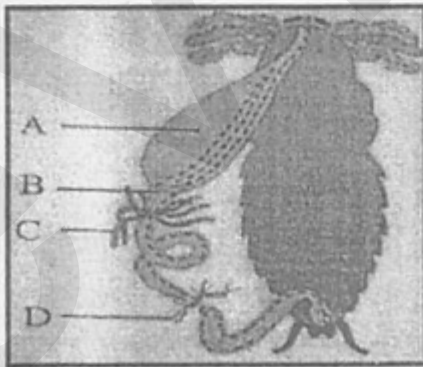
- (a) Major pigments
- (b) Stored food
- (c) Cell wall
14. Represent diagrammatically the (a) coelomate (b) acoelomate and (c) pseudocoelomate conditions among animals ? (3)

OR

- (a) What are the differences between a virus and a viroid?
- (b) Define 'symbiots' and give an example of the same.
15. In nearly all animal tissues, specialized junctions provide structural and functional links. How many types of such junctions are present? List their names and state their functions. (3)
16. State how placenta is related to female reproductive part in flowering plants. Mention the types of placentation found in the angiosperms. (3)
17. How do enzymes speed up the rate of a chemical reaction? Explain using a suitable graphical representation. (3)
18. Explain 9+2 arrangement of Cilium. Support your answer with a labelled diagram. (3)
19. What is respiratory quotient? Compare its value for carbohydrates, proteins and lipids? Which out of the three respiratory substrates have maximum RQ and why? (3)
20. Draw a neat sectional view of the heart and label the following parts : (3)
- (a) Nodal tissue from where the heart-beat generates.
- (b) Chordae tendinae
- (c) An artery which carries deoxygenated blood.
- (d) Bundle of His
21. Write two points of differences between : (3)
- (a) Actin and myosin
- (b) Red and white muscles
- (c) Pectoral and Pelvic girdle

#### SECTION-D

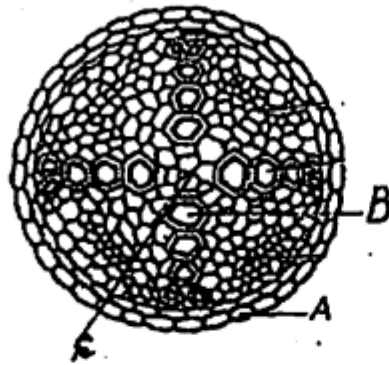
22.



Observe the given diagram :

- Identify the parts A and D
- Discuss the role of part B in the process of digestion.
- What function does the part D has?

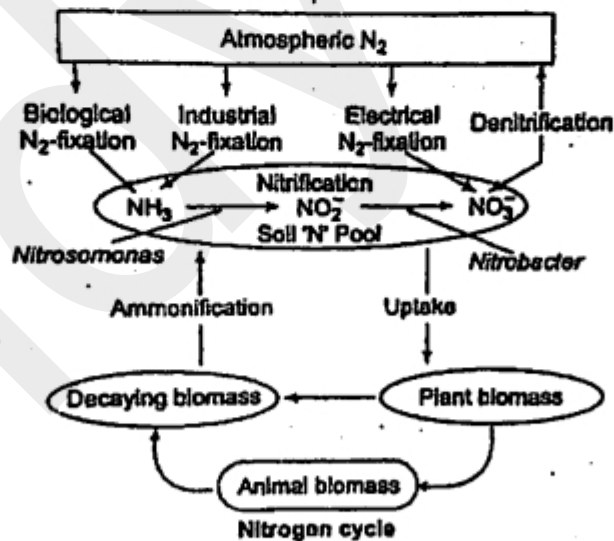
23.



A class XI student made a temporary preparation of T.S. of sunflower root and observed it under the microscope and drew the given diagram.

- What is part A depicting ? List its one characteristic feature.
- Name parts B and C
- What type of arrangement does xylem show? Name this type of arrangement.

24.



24. Nitrogen is an important nutrient for all living organisms. It forms amino acids and proteins. It occurs as  $N_2$  in atmosphere and cannot be directly utilised. Plants compete with microbes for the limited nitrogen that is available in the soil. And hence nitrogen becomes a limiting nutrient for both natural and agricultural ecosystems.

- (a) State the methods by which atmospheric nitrogen can be fixed and used by plants.
- (b) Name one bacterium which reduces nitrate back into  $N_2$ . What is this process called?
- (c) Name the enzyme which is exclusively present in prokaryotes and is essential for nitrogen fixation.

**SECTION-E**

25. (i) How do neutral solutes move across the plasma membrane? Can the polar molecules also move across it in the same way? If not, how are these transported? What is the requirement for carrying ions across the membrane?
- (ii) Give specific term for each of the following :
- (a) Cluster of ribosomes found in cytoplasm.
  - (b) Intensive infolding of the inner membrane of mitochondria.
  - (c) Stacks of closely packed thylakoids.
  - (d) Stalked particles on the inner membrane of mitochondria.

**OR**

- (i) Briefly explain the Metaphase, Anaphase and Telophase of mitosis with the help of diagrams.
  - (ii) Explain the following terms :
    - (a) Synaptonemal complex
    - (b) Chiasmata
26. Draw the diagrammatic representation of Hatch and Slack pathway. What type of plants show this pathway? Give one example. Their leaf anatomy is different from other plants. How?

**OR**

Draw schematic representation of the various steps of Glycolysis. How is glycolysis different from citric acid cycle? State two points.

27. Draw and explain the schematic representation of generation and conduction of nerve impulse from point A to point B.

**OR**

With the help of diagrammatic representation, explain the mechanism of hormone action :

- (a) Protein hormone
- (b) Steroid hormone

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