

**NORTH-EX PUBLIC SCHOOL**  
(Senior Secondary, Affiliated To CBSE)  
School Block, Jain Nagar, Sector-38, Rohini, Delhi – 81  
HALF YEARLY EXAMINATION, 2023-24  
SUBJECT – BIOLOGY  
CLASS - XI

TIME : 3 hrs

MM : 70

General instructions:

- i. All questions are compulsory.
- ii. The question paper has five sections and 33 questions. All questions are compulsory .
- iii. Section -A has 16 questions of 1 mark each ; section-B has questions of 2 marks each; section-C has 7 questions of 3marks each; section -D has 2 case based questions of 4 marks each ; and section -E has 3 questions of 5 marks each.
- iv. There is no overall choice.however internal choices have been provided in some questions.A student has to attempt only one of the alternative in such questions.
- v. Wherever necessary, neat and properly labeled diagrams should be drawn .

**Section-A**

1. Select the incorrect statements.
  - A. Lower the taxon, More are the characteristic that the members within the tax on share.
  - B. Order is the assemblage of genera which exhibit a few similar characters.
  - C. Cat and dog are included in the same family Validee.
  - D. Binomial nomenclature was introduced by carolouslinnaeus
    - a) A,B and C
    - b) B,C and D
    - c) A and D
    - d) B andC
    - e) C and D
2. Morel and truffles groups of fungi are classified under
  - a) Phycomycetes
  - b) Deuteromycetes
  - c) Basidiomycetes
  - d) Ascomycetes
3. Match the storage product listed under column I with the organisms given under column II choose the appropriate option from the given choices.

Column I	column II
A. Glycogen	p Saragassum
B. Pyrenoids	q nostoc
C. Laminaian and Mannitol	r polysiphonia
D. Floridian starch	s spirogyra T agaricus

  - a) A-t, B-s, C-p, D- r
  - b) A-r, B-s, C-p, D- t
  - c) A-q, B-p, C-s, D-r
  - d) A-s, B-r, C-t, D-q

4. Which of the following is responsible for peat formation?
- Marchantia
  - Riccia
  - Funaria
  - Sphagnum
5. Excretory organ of platyhelminthes is
- Gills
  - Flame cells
  - 6Nephridia
  - Trachea
6. Match the columns I with column II and choose the correct answer.
- | Column I                           | column II          |
|------------------------------------|--------------------|
| I. Incomplete digestive system     | A. Sponges.        |
| II. Cellular level of organisation | B. Coelentrates.   |
| III. Radial symmetry               | C. Annelids        |
| IV. Pseudocoelomates               | D. Platyhelminthes |
| V. Metamerism                      | E aschelminthes    |
- I – C, II- D , III- A, IV- B, V-E
  - I- D, II- E, III- B, IV- C, V- A
  - I- A, II- B, III – C , IV – D, V-E
  - I-B, II- C, III- D, IV- A , V- E
7. When the margin of sepals or petals overlap one another without any particular direction, the condition is termed as
- Vexillary
  - Imprimatur
  - Twisted
  - Validate
8. Consider the following statements
- In racemose inflorescence the flower are borne in a basipetal order.
  - Epigynous flower are seen in rose plant.
  - In brinjal the ovary is superior.
- Of these statements
- A and B are true but C is false .
  - A and C are true but B is false .
  - A and B are false but C is true.
  - A and C are false but B is true.
9. Which is the correct set ?
- Trypsin- hormone
  - Insulin- enzymes
  - GLUT-4- enable glucose transport into cells
  - Collagen- intracellular ground substance
10. The tightly bound non proteinaceous organic compound is
- Prosthetic group
  - Cofactor
  - Apoenzyme
  - Holoenzyme
11. A competitive enzyme inhibitor
- Increase  $k_m$  without affecting  $V_{max}$ .

- b) Decreases  $k_m$  without affecting  $V_{max}$ .  
 c) Increases  $V_{max}$  without affecting  $K_m$   
 d) Decreases both  $V_{max}$  and  $K_m$ .
12. Which one of the following cellular parts is correctly described?  
 a) Thylakoids- flattened membranous sacs forming the grana of chloroplasts.  
 b) Centrioles- sites for active RNA synthesis  
 c) Ribosomes-those on chloroplasts are larger (80S) while those in the cytoplasm are smaller (70S)  
 d) Lysosomes- optimally active at a pH of about 8.5.
13. Match the following and select the correct answer.
- |                |                                    |
|----------------|------------------------------------|
| A. Centriole   | i infoldings in mitochondria       |
| B. Chlorophyll | ii thylakoids                      |
| C. Cristae     | iii nucleic acids                  |
| D. Ribozymes   | iv basal body of cilia or flagella |
- |    | A  | B   | C  | D   |
|----|----|-----|----|-----|
| a) | iv | ii  | i  | iii |
| b) | i  | ii  | iv | iii |
| c) | i  | iii | ii | iv  |
| d) | iv | iii | i  | ii  |
14. Which one of the following structures between two adjacent cells in an effective transport pathway?  
 a) Plasmodesmata  
 b) Plastoquinines  
 c) Endoplasmic reticulum  
 d) Plasmalemma
15. Assertion : A coenzyme or metal ions that is very tightly bound to enzyme protein is called prosthetic group.  
 Reason : a complete, catalytically active enzyme together with its bound prosthetic group called apoenzyme.
16. Assertion : fluidity of plasma membrane is due to presence of phospholipids.  
 Reason : fatty acids of the phospholipids have kinks which do not allow the packing of molecules.

### Section-B

17. What is Heterospory? Briefly comment on its significance.
18. Illustrate a glycosidic, peptide and a phosphodiester bond.
19. Both lysosomes and vacuoles are endomembrane structures. Yet they differ in terms of their functions. Comment.
20. What is stomatal Apparatus? Explain the structure of stomata with a labeled diagram.
- 21.
- Give a brief account of viruses with respect to their structure and nature of genetic material.
  - How are viroids different from viruses?

### Section-C

22. Draw Illustrate to bring out the anatomical difference between monocot root and dicot root.

23. Draw a labeled diagram of digestive system of Frog and briefly explain it?
- 24.
- With the help of labeled diagram explain the “fluid mosaic model “structure of cell membrane.
  - State cell theory.
  - Give the specific terms of stalked particle on inner membrane of mitochondria.
- 25.
- Explain the structure of proteins.
  - Differentiate between the primary and secondary metabolites with examples.
26. Describe briefly the four major groups of Fungi.
27. Describe the various types of placentations found in flowering plant.
28. Write a note on economic importance of algae and gymnosperms.

OR

Name three groups of plant that bear archegonia. Briefly describe the life cycle of bryophyte.

### Section-D

#### 29. Case based -1

#### Pteridophytes

First terrestrial plants. Prefer cool, damp and shady places to grow. Main plant body is sporophyte which is differentiated into true root, stem and leaves. Leaves may be small as in Selaginella or large as in ferns. Sporangia having spores are subtended by leaf-like appendages called sporophylls. (Sporophylls may be arranged to form strobili or cones.) In Sporangia, the spore mother cells give to spores after meiosis. Spores germinate to form haploid gametophytic structure called prothallus which is free living, small, unicellular and photosynthetic.

- Which of the following is heterosporous?
    - Selaginella
    - Salvinia
    - Marsilea
    - All of the above
  - Gametophytic and sporophytic phase is independent
    - Angiosperm
    - Gymnosperm
    - Bryophytes
    - Pteridophytes
  - Evolutionary important characters of selaginella is
    - Seed habitat and heterosporous nature
    - Vivipary
    - Rhizophore
    - Spikes
  - The development of zygotes into young embryo take place with in the
    - Gynophore
    - Male gametophyte
    - Female gametophyte
    - Prothallus
30. Case based -2

## ENZYMES

Enzymes are biocatalysts. Almost all enzymes are proteins. They have primary, secondary and tertiary structure. • Active site of an enzyme is a crevice or pocket into which substrate fits. • Enzymes get damaged at high temperatures. Enzymes isolated from thermophilic organisms (live under high temperatures) are thermostable. • Enzymes accelerate the reactions many folds. Enzymes lower the activation energy of reactions. Factors affecting enzyme activity: (a) Temperature: Show highest activity at optimum temperature. Activity declines above and below the optimum value. (b) pH: Enzymes function in a narrow range of pH. Highest activity at optimum pH. (c) Concentration of substrate: The velocity of enzymatic reaction rises with increases in substrate concentration till it reaches maximum velocity (V). Further increase of substrate does not increase the rate of reaction as no free enzyme molecules are available to bind with additional substrate. Enzyme inhibition: When the binding of a chemical shuts off enzyme activity, the process is called inhibition and chemical is called inhibitor.

- I. An \_\_\_\_\_ of an enzyme is a crevice or pocket into which the substrate fits.
  - a) Active site
  - b) Passive site
  - c) Both A and B
  - d) None of the above
- II. Feedback inhibition of an enzymatic reaction is caused by :
  - a) Substrate
  - b) Enzyme
  - c) End product
  - d) Rise in temperature
- III. A competitive inhibitor of succinic dehydrogenase is :
  - a) Alpha ketoglutarate
  - b) Malate
  - c) Malonate
  - d) Oxaloacetate
- IV. Enzyme that catalyze interconversion of optical, geometrical or positional isomers are :
  - a) Ligases
  - b) Lyases
  - c) Hydrolases
  - d) Isomerases

### Section-E

31.
  - a) How important is the presence of air bladder in pisces.
  - b) Compare the water transport system of poriferans and the echinoderms.
  - c) What are peculiar features that you find in parasitic platyhelminthes.
32.
  - a) Diagrammatically represent the types of chromosome based on position of centromere.
  - b) What does chromatin contain?

c) What is perinuclear space?

33. Answer the following questions:

- a) Define aestivation. Which type of aestivation is found in china rose, calotropis Gulmohar and pea?
- b) Take flower of solanaceae and write its semi technical description. Also draw their floral diagram after studying them.
- c) Mention the significance of casparian strips. Where do you find them?