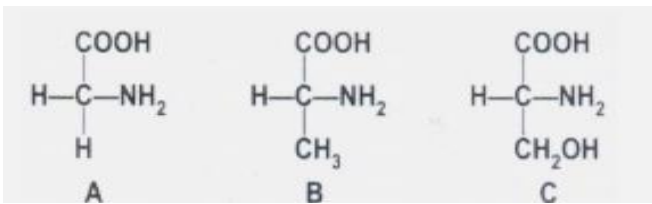


## General Instructions:-

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

**Section – A**

- Which among the following is not a genus? 1  
 a) *Musca*                      b) *Panthera*                      c) *Solanum*                      d) *nigrum*
- A plant shows thallus level of organization. It shows rhizoids and is haploid. It needs water to complete its life cycle because the male gametes are motile. Identify such plant. 1  
 a) *Ectocarpus*                      b) *Selaginella*  
 c) *Marchantia*                      d) *Pinus*
- In \_\_\_\_\_ type of vascular bundles, the xylem and phloem are situated along the same radius of the vascular bundles. 1  
 a) Conjoint                      b) Radial  
 c) both a and b                      d) never on same radius
- Which one of the following is contrary to the rules of nomenclature? 1  
 a) The names are written in Latin and are italicized.  
 b) When written by hand the names are to be separately underlined.  
 c) The first word denoting the specific epithet starts with a capital letter while genus starts with a small letter.  
 d) The first word in a biological name represents the genus name and the second is a specific epithet.
- The molecular structures of three amino acids are given above. Identify the amino acids A, B and C. 1  

- Protonema is 1  
 a) haploid and is found in mosses.                      b) diploid and is found in liverworts.  
 c) diploid and is found in pteridophytes.                      d) haploid and is found in pteridophytes.
- Which type of stem or root will show radial vascular bundle, polyarchy xylem, well-developed pith? 1  
 a) Monocot stem                      b) Dicot stem  
 c) Monocot root                      d) Dicot root
- The taxonomic unit 'Phylum' in the classification of animals is equivalent to which hierarchical level in classification of plants? 1  
 a) Class                      b) Order                      c) Division                      d) Family

9. All single celled eukaryotic organisms belong to: 1  
 a) Monera                      b) Protista                      c) Fungi                      d) Bacteria
10. In leaves, the ground tissue consists of thin-walled chloroplast containing cells called \_\_\_\_\_. 1  
 a) subsidiary cells                      b) epidermal cells  
 c) mesophyll                      d) pith
11. Which among the following statement is true about frog? 1  
 a) Eyes are bulged and naked.  
 b) The frog never drinks water but absorb it through the skin.  
 c) The hind limbs end in four digits and they are larger and muscular than fore limbs.  
 d) Frogs do not exhibit sexual dimorphism.
12. Which among the following is an incorrect statement? 1  
 a) The animal order Carnivora, includes families like Felidae and Canidae.  
 b) Class includes related orders.  
 c) Family has a group of related genera with less number of similarities as compared to genus and species.  
 d) None of the above.

Question No. 13 to 16 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- a) Both A and R are true and R is the correct explanation of A.  
 b) Both A and R are true and R is not the correct explanation of A.  
 c) A is true but R is false.  
 d) A is false but R is true.
13. Assertion: Two kingdom classification was found inadequate. 1  
 Reason: Classification of organisms was whether they have red blood or not and a large number of organisms did not fall into either category.
14. Assertion: Frog have the ability to change the color to hide them from their enemies. 1  
 Reason: Frog undergo summer sleep (aestivation) and winter sleep (hibernation).
15. Assertion: In racemose type of inflorescences the main axis continues to grow. 1  
 Reason: The flowers are borne in a basipetal order in racemose inflorescence.
16. Assertion: Amino acids are called  $\alpha$ -amino acids. 1  
 Reason: Amino acids containing an amino group and an acidic group as substituents on the same carbon i.e., the  $\alpha$ -carbon.

### Section – B

17. a) What name is given to those archaebacteria, which live in (i) extreme salty areas and (ii) hot springs, respectively? 2  
 b) What facilitates them to live in such harsh habitats?
18. a) Why are mitochondria and chloroplasts are not considered in the endomembrane system? 2  
 b) List main postulates of cell theory.
19. a) Write two codes of nomenclature of living organisms. 2  
 b) Also state their significance.
20. a) How are open Vascular bundles differ from closed vascular bundles? Explain with diagram only. 2  
 b) What are trichomes ? State their functions.
21. Provide a technical term for the following:  
 I. Blood filled cavity in arthropods                      II. A stinging organ of jellyfish  
 III. Free-floating form of Cnidaria                      IV. Lateral appendages in aquatic annelids

(OR)

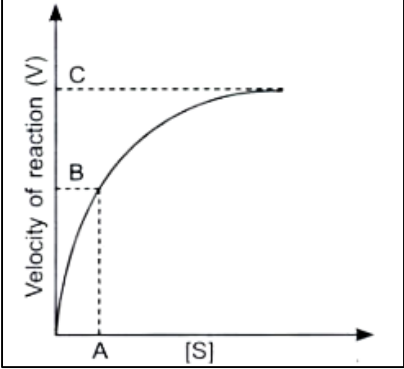
Give an example of:

- |      |                     |     |                              |   |
|------|---------------------|-----|------------------------------|---|
| I.   | An oviparous mammal | II. | Roundworm                    |   |
| III. | A limbless reptile  | IV. | Fish possessing poison sting | 2 |

### Section – C

22. Suppose you are examining a cross section of a stem under compound microscope, how would you determine whether it is monocot stem or dicot stem? Distinguish between them. 3
23. Why are Deuteromycetes commonly known as imperfect fungi? Mention two features in which they resemble ascomycetes. 3
24. Explain different types of phyllotaxy with suitable examples. 3
25. a) Mention the function of the Ureters in frog.  
b) What are different modes of respiration in frog? 3
26. a) Why do oils generally remain in liquid state even in winters?  
b) What is the difference between RNA and DNA in terms of sugar present in them? Draw the structure of ribose sugar. 3
27. What is the fluid mosaic model of the plasma membrane? Explain with diagram.  
(OR)  
Give the structural details of an eukaryotic nucleus along with its diagram. 3
28. a) Distinguish between poikilothermous and homoiothermous organisms. 3  
b) Compare the water transport system of poriferans and the echinoderms.

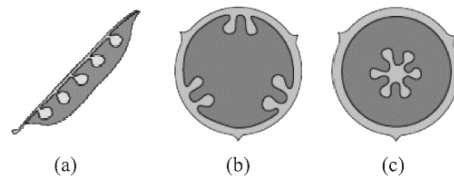
### Section – D

29. Study the following graph showing the effect of substrate concentration on the rate of enzyme activity and answer the questions that follow: 4
- a) What is represented by A, B?  
b) Why is there no further increase in the velocity of enzyme action with addition of substrate?  
(OR)  
Mention the major differences between inorganic catalysts and enzyme catalysts.  
c) What does C represent in the graph?
- 
30. Our understanding of the plant kingdom has changed over time. Fungi, and members of the Monera and Protista having cell walls have now been excluded from Plantae though earlier classifications placed them in the same kingdom. So, the cyanobacteria that are also referred to as blue green algae are not 'algae' any more.
- a) What are the basis of the phylogenetic classification system?  
b) What was the earliest system of classification for plants? Mention its basis of classification. Also state its drawbacks.  
c) Define numerical taxonomy.  
(OR)  
Give the term for following system of classification :  
A. Based on cytological information like chromosome number, structure, behaviour.  
B. Uses the chemical constituents of the plant. 4

### Section – E

31. I. Differentiate between :  
a) Actinomorphic flower and Zygomorphic flower  
b) Apocarpous ovary and Syncarpous ovary

II. Observe the given figure showing various types of placentation. Identify the type of placentation. Give one example of each.

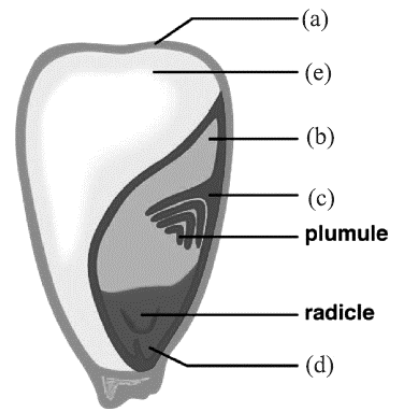


(OR)

I. Provide the scientific terms for the following :

- a) Bud that later develops into a branch.
- b) Roots originate from the base of the stem.
- c) The leafbase may become swollen.
- d) A sterile stamen.

II. In the given structure of a Monocotyledonous seed label the parts a, b, c, d, e. Give the function of part 'e'.



5

32. Explain the structure and functions of a cell organelle which remains in close association with the endoplasmic reticulum for its function.

(OR)

- I. What is a mesosome in a prokaryotic cell? Mention the functions that it performs.
- II. How does the position of centromere form the basis of classification of chromosomes? Support your answer with a diagram showing the position of centromere on different types of chromosomes.

5

33. I. How is open type of circulatory system different from closed type of circulatory system? Explain with example.  
 II. Represent diagrammatically the classification of animals based on coelom conditions in animals.

(OR)

- I. Draw a labelled diagram of the basic body plan of chordates.
- II. Mention the four characteristic features which all chordates possess.

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