



ANGEL'S PUBLIC SCHOOL

SAMPLE PAPER

HALF YEARLY EXAMS SESSION 2025 – 26

CLASS – XI

TIME : 3 HRS.

SUBJECT – BIOLOGY

M.M:70

General Instructions:

- (a) All questions are compulsory.
- (b) The question paper has five sections and 33 questions. All questions are compulsory.
- (c) 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.
- (d) 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.
- (e) Wherever necessary, neat and properly labeled diagrams should be drawn.

SECTION - A

1. A group of plants and animals with similar traits of any rank is:
(a) Taxon (b) Species (c) Genus (d) Order
2. Which of the plant groups needs both land and water to complete their life cycle?
(a) Tracheophyta (b) Pteridophyta (c) Thallophyta (d) Bryophyta
3. The condensation of chromosomes is observed in _____.
(a) Prophase 1 (b) Anaphase 1 (c) Metaphase 1 (d) None of the above
4. Name the simplest amino acid:
(a) Alanine (b) Tyrosine (c) Asparagine (d) Glycine
5. _____ is an edible underground stem.
(a) Potato (b) Groundnut (c) Sweet potato (d) Carrot
6. Flame cells are the excretory structures for:
(a) Annelida (b) Coelenterates (c) Platyhelminthes (d) Echinodermata
7. Which class has the largest number of animals?
(a) Fishes (b) Reptiles (c) Insects (d) Mammals
8. A plant that has seeds but no flowers and fruits?
(a) Bryophytes (b) Gymnosperms (c) Mosses (d) Pteridophytes
9. What is the correct sequence?
(a) Genus-species-order-kingdom (b) Species-order-phylum-kingdom
(c) Species-genus-order-phylum (d) Kingdom-phylum-class-order
10. Which of the following organisms can be found in extreme saline conditions?
(a) Eubacteria (b) Archae bacteria (c) Cyanobacteria (d) Mycobacteria
11. _____ is a form of cell division which results in the creation of gametes or sex cells.
(a) Mitosis (b) Meiosis (c) Miosis (d) None of the above

12. Veins of the leaves are useful for:

- (a) Mechanical support
- (b) Transport of water and minerals
- (c) Transport of organic nutrients
- (d) All of the above

13. Assertion: The plasma membrane is selectively permeable to some molecules present on either side of it.

Reason: Neutral solutes may move across the membrane by the process of simple diffusion.

- (a) Both assertion and reason are true, and reason is the correct explanation of the assertion.
- (b) Both assertion and reason are true, and reason is not the correct explanation of the assertion.
- (c) Assertion is true but reason is false.
- (d) Both assertion and reason are false.

14. Assertion : Interphase is resting stage.

Reason : The interphase cell is metabolically inactive.

Mark the correct choice as:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.

15. Assertion : Human diet should compulsorily contain glycine, serine and tyrosine.

Reason : Essential amino acids can not be synthesized in the human body

Mark the correct choice as:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.

16. Assertion: Plants having fibrous root system are wheat and barley.

Reason: Fibrous root system is found in dicots only.

Mark the correct choice as:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.

SECTION - B

17. Describe the important characteristics of Angiosperms. .

18. Write correctly the scientific name for mango species.

19. Are viruses living or non-living?

20. What are the advantages of five kingdom classification?

21. What is bioluminescence? Give an example.

SECTION - C

22. Why are cyanobacteria used in agricultural fields for crop improvement?

23. What is diatomaceous earth? Why are diatoms referred to as 'pearls of the ocean'?

24. What do you understand by 'phycobiont' and 'mycobiont'?

25. Why are phloem and xylem complex tissues?

26. Describe the importance of meiosis.

OR

What is the significance of mitochondria and plastid ?

27. Draw the structure of
(a) Ribose sugar (b) Amino acid (c) Purine
28. Describe the structure and functions of the organelles stated below-
(a) cell membrane (b) chloroplast

SECTION – D

Q. No. 29 and 30 are case-based questions.

29. Read the following and answer any four questions:

Studies showed that the cell membrane is mainly composed of lipids and proteins. The major lipids are phospholipids that are arranged in a bilayer. Also, the lipids are arranged within the membrane with the polar head towards the outer sides and the hydrophobic tails towards the inner part. This ensures that the nonpolar tail of saturated hydrocarbons is protected from the aqueous environment. In addition to phospholipids membrane also contains cholesterol. The ratio of protein and lipid varies considerably in different cell types.

An improved model of the structure of cell membrane was proposed by Singer and Nicolson (1972) widely accepted as fluid mosaic model. According to this, the quasi-fluid nature of lipid enables lateral movement of proteins within the overall bilayer. This ability to move within the membrane is measured as its fluidity.

One of the most important functions of the plasma membrane is the transport of the molecules across it. The membrane is selectively permeable to some molecules present on either side of it. Many molecules can move briefly across the membrane without any requirement of energy and this is called the passive transport.

- (a) In cell membrane, the tail of phospholipid is
- (b) Define simple diffusion.
- (c) Give the classification of membrane protein.
- (d) What is the ratio of protein and lipid present in cell membrane of erythrocyte?

OR

The earliest systems of classification used only gross superficial morphological characters such as habit, colour, number and shape of leaves, etc. They were based mainly on vegetative characters or on the androecium structure (system given by Linnaeus). Such systems were artificial; they separated the closely related species since they were based on a few characteristics. Also, the artificial systems gave equal weightage to vegetative and sexual characteristics; this is not acceptable since we know that often the vegetative characters are more easily affected by environment. As against this, natural classification systems developed, which were based on natural affinities among the organisms and consider, not only the external features, but also internal features, like ultra-structure, anatomy, embryology and phytochemistry. Such a classification for flowering plants was given by George Bentham and Joseph Dalton Hooker.

At present phylogenetic classification systems based on evolutionary relationships between the various organisms are acceptable. This assumes that organisms belonging to the same taxa have a common ancestor. We now use information from many other sources too to help resolve difficulties in classification. These become more important when there is no supporting fossil evidence.

Numerical Taxonomy which is now easily carried out using computers is based on all observable characteristics. Number and codes are assigned to all the characters and the data are then processed. In this way each character is given equal importance and at the same time hundreds of characters can be considered. Cytotaxonomy that is based on cytological information like

chromosome number, structure, behaviour and chemotaxonomy that uses the chemical constituents of the plant to resolve confusions, are also used by taxonomists these days.

(a) In phylogenetic system of classification, it is believed that organisms belongs to the same taxa have _____.

(b) Linnaeus, gave the earliest artificial system of classification systems which was based on:

- (i) Structure of leaves
- (ii) Androecium structure
- (iii) Colour of leaves
- (iv) All of the above

(c) Why natural classification systems was developed, what was the need of it?

(d) What are the basis of the phylogenetic classification system?

30. The naming of living organisms is called nomenclature. There are two types of names, one is vernacular (common names) and the other is the scientific name. Local names are used in local languages or common language and are easy for the local peoples but these names are not used by biologists because:

- (a) For many species a single local name is often used.
- (b) The local names sometimes lead to incorrect meanings about the organism.
- (c) In different regions of the country or world, the different local names are used for one organism.

Scientific names: The names are given according to certain rules and are followed by the biologist all over the world. To make it common around the world various international codes have been established.

These codes are:

ICBN

ICZN

(a) What is the need of nomenclature?

(b) Which among the following is involved in the naming of the animals scientifically?

- (i) ICBN
- (ii) ICAN
- (iii) ICPN
- (iv) ICZN

(c) Define nomenclature.

(d) What is ICZN?

SECTION - E

31. Describe the different phases of mitosis. Mention the chromosomal events during each stage.

OR

In catalyzed reactions, the formation of the enzyme-substrate complex is the first step. Explain the other steps until the formation of the product.

32. On the basis of morphology of frog answer the following questions:

- (a) Mention the phylum to which frog belongs.
- (b) Name the membrane which protects the eyes of frog in water.
- (c) Where is bile stored in frog?
- (d) Write the name of frog species which is common in India.
- (e) The ears in frog are known as ____.

33. Define the following terms:- Angiosperms, Monocotyledons and Dicotyledons. How monocotyledons are different from dicotyledons?