



Delhi Public School, Howrah

PERIODIC TEST I (2025-26)

CLASS XI

Care must be taken not to write anything on the question paper. All the questions must be attempted in the correct sequence

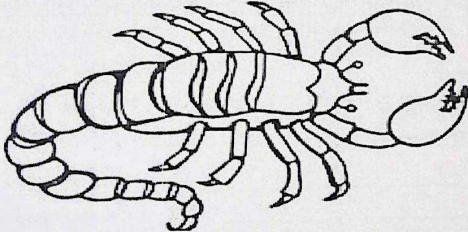
Biology (Code No. 044)

Time:- 3 Hours

F.M. - 70

General Instructions:

1. All questions are compulsory.
2. The question paper has five sections: Section A, Section B, Section C, Section D and Section E. There are 33 questions in the question paper.
3. Section- 'A' has 16 questions containing MCQs and Assertion-Reasoning type questions of one 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; Section 'E' has 3 questions of 5 marks each.
4. There is no overall choice. However internal choice is provided in some questions. Students have to do any one of the alternatives.
5. Wherever necessary, neat and properly labelled diagrams should be drawn.

SECTION A		
1.	Which of the following characteristic does not match with given genus? A. <i>Bombyx</i> - jointed appendages with chitinous exoskeleton. B. <i>Nereis</i> - monoecious with metamerous. C. <i>Pristis</i> - contains placoid scales. D. <i>Ctenoplane</i> - shows bioluminescence.	1
2.	Given below are some characteristic features of the arthropod shown in the diagram. Identify the correct characteristics.  I. Possess eight walking legs. II. Chelicerae are appendages for grasping prey. III. Mandibles are absent. IV. Main body cavity is haemocoel. A. I, II, III, IV B. I and IV C. I, III and IV D. II and IV	1
3.	Which of the following statements is correct about respiratory organs of different animals? A. The exchange of O ₂ and CO ₂ via simple diffusion across the body surface occurs in aquatic arthropods. B. A complex system of air tubes called trachea is present in earthworm for respiration. C. Fishes have lungs for respiration. D. Cutaneous respiration occurs in amphibians.	1
4.	Arrange the following in ascending order of similar characteristics. I. Family II. Genus III. Class IV. Species A. III < I < II < IV B. I < III < II < IV C. II < I < IV < III D. I < II < III < IV	

5. Match the given plant species with their characteristic features:

PLANT SPECIES	CHARACTERISTIC FEATURE
a. <i>Sphagnum</i>	i. male cones and megasporophylls are borne on different trees
b. <i>Selaginella</i>	ii. a colonial form of green algae that stores food as oil droplets
c. <i>Cycas</i>	iii. have an elaborate mechanism of spore dispersal
d. <i>Chlamydomonas</i>	iv. heterosporous pteridophyte used in landscaping.

A. a-i, b-iv, c-iii d-ii

B. a-iii, b-ii, c-i, d-iv

C. a-iii, b-iv, c-i, d-ii

D. a-i, b-ii, c-iii, d-iv

6. If the zygote of a pteridophyte consists of 2X number of chromosomes, how many chromosomes should the gametophyte have?

A. 2X

B. 3X

C. 4X

D. X

7. Which of the following conditions would shift the Oxygen Dissociation Curve (ODC) to the right, indicating a decreased affinity of haemoglobin for oxygen and facilitating oxygen release to the tissues?

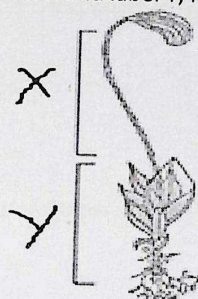
A. Increased pH and decreased body temperature.

B. Decreased pCO₂ and decreased 2,3-BPG levels.

C. An increase in H⁺ concentration and body temperature.

D. Decreased H⁺ concentration and increased pCO₂.

8. Given below is the diagram of a moss plant. What is the ploidy level and nature of the structures represented by label X and label Y, respectively?



A. X - Haploid (Gametophyte); Y - Diploid (Sporophyte)

B. X - Diploid (Sporophyte); Y - Haploid (Gametophyte)

C. X - Haploid (Sporophyte); Y - Diploid (Gametophyte)

D. X - Diploid (Gametophyte); Y - Haploid (Sporophyte)

9.

Estimated total species
on earth

Ongoing scientific efforts: exploration,
identification, classification

Currently identified
and described species

The diagram above visually represents the current state of our knowledge regarding global biodiversity. What is the most significant implication of the vast difference between the "Estimated total species on earth" and the "Currently identified and described species," as it relates to the study of the "Living World"?

A. It suggests that the majority of earth's biodiversity is likely to be found in aquatic ecosystems.

B. It indicates a rapid rate of species extinction, making identification efforts redundant.

C. It highlights the critical and ongoing need for systematic classification and continuous exploration of life forms.

D. It implies that existing classification systems are too complex and hinder new discoveries.

10. Consider the following animals: (i) *Sycon* (ii) *Obelia* (iii) *Taenia* (iv) *Nereis*

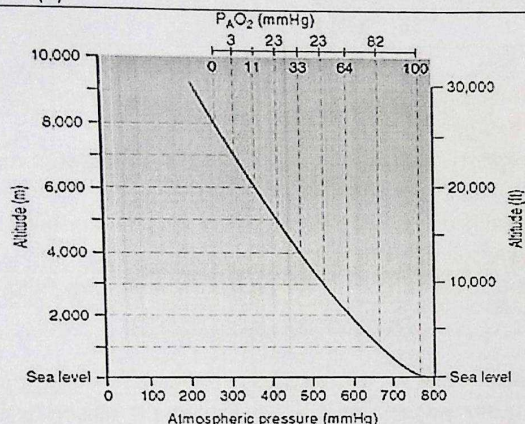
Choose the correct option from the following which arrange these animals in increasing order of complexity

1

of their body organization and associated germ layers:

- A. (i) → (ii) → (iii) → (iv)
- B. (ii) → (i) → (iii) → (iv)
- C. (i) → (iii) → (ii) → (iv)
- D. (i) → (iv) → (iii) → (ii)

11.



A person unacclimatized to high altitudes rapidly ascends to a height of 4,000 meters, where the atmospheric partial pressure of oxygen is significantly reduced, as illustrated by the given graph. Which of the following is the most immediate and critical physiological response that the body initiates to counteract the resulting hypoxia and ensure adequate oxygen delivery to vital tissues?

- A. Increased production of red blood cells (erythropoiesis) by the bone marrow.
- B. A significant increase in the rate and depth of breathing (hyperventilation).
- C. Decreased affinity of hemoglobin for oxygen, causing a right shift in the oxygen-dissociation curve.
- D. Increased cardiac output achieved primarily by a stronger myocardial contraction.

12. Which of the following is against the rules of ICBN?

- A. Handwritten scientific names should be underlined.
- B. Every species should have a generic name and a specific epithet.
- C. Scientific names are based on Latin and thus should be italicized.
- D. Generic and specific names should start with small letters.

Question no 13 to 16 consists of two statements: Assertion and Reason. Answer these questions selecting the appropriate option.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but 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(A):** Organisms are divided into distinct taxonomic categories.
Reason(R): Higher the taxonomic category, the more similarities are present within the organisms.

t

14. **Assertion(A):** Mammals perform negative pressure breathing.
Reason(R): Using muscular movements, mammals create a pressure gradient so that they can perform inspiration and expiration.

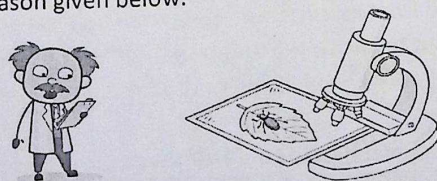
1

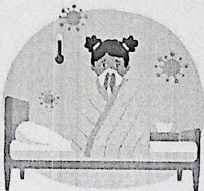
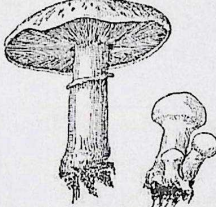
15. **Assertion (A):** Archaeobacteria are called ancient bacteria.
Reason (R): They can survive in harsh habitats like extreme salty areas, hot springs, and marshy areas.

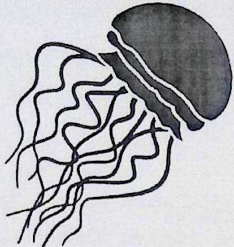
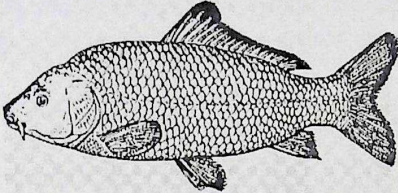
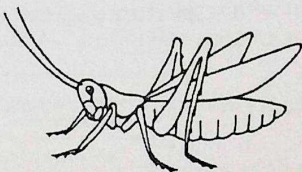
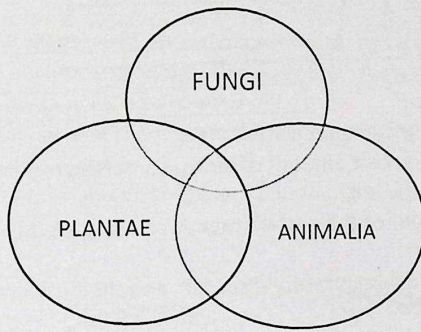
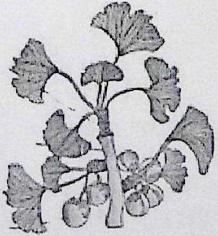
1

16. Given below is the diagram that shows a scientist taking notes after observing a newly discovered insect. Two statements are provided on the basis of the diagram. Comment on the appropriateness of the assertion and reason given below.

1



	Assertion(A): Before naming and classifying the newly observed insect in the diagram, it is crucial to accurately characterize its features and then identify it. Reason(R): Characterization involves understanding the correct description of the organism, while identification is the process of comparing its characteristics with known organisms to determine if it is new or already known, which are essential steps before naming and classifying.	
	SECTION B	
17.	Attempt either option A or B A. i. A student observed two animals that looked similar but behaved differently and lived in different habitats. How can they confirm if both belong to the same species? ii. How does the concept of binomial nomenclature help in international scientific communication? OR B. i. Two plants have similar morphological features but different chromosome numbers. Can they be classified under the same species? Provide suitable explanation for your answer. ii. A botanist finds a plant specimen in a tropical rainforest. Which steps should they follow to classify and name it scientifically?	2
18.	Attempt either option A or B A. A person was suffering from common cold. She wanted to classify the causative agent of her disease under Whitaker classification system. But she was unable to do so. Explain the reason for this.  OR B. A botany student identified the fungus given below and initially placed it under deuteromycetes. It was later reassigned to a different class of fungi. Identify the class and provide a reason for this reclassification. 	2
19.	Diatoms are often referred to as the "chief producers in oceans," while <i>Euglena</i> is described as a "connecting link between plants and animals." Analyse these statements by comparing and contrasting their key characteristics that justify these roles within kingdom Protista.	2
20.	i. 'Sponges are placed at the base of the animal evolutionary tree.' Justify this statement. ii. An animal has a pseudocoelom and a complete digestive tract. Identify its probable phylum and provide a reason for your answer.	2
21.	Attempt either option A or B A. <i>Neurospora</i> – an ascomycetes fungus has been used as a biological tool to understand the mechanism of plant genetics much in the same way as <i>Drosophila</i> has been used to study animal genetics. What makes <i>Neurospora</i> so important as a genetic tool? OR B. What do the terms 'algal bloom' and 'red-tides' signify.	2
	SECTION C	
22.	A. A very small, prokaryotic organism was isolated from a patient suffering from atypical pneumonia. Lab tests revealed it lacked a cell wall and was resistant to antibiotics that target cell wall synthesis (like penicillin). To which kingdom and genus would you classify this organism? Why is its resistance to penicillin considered significant? B. Diagrammatically classify the different types of bacteria based on their shapes.	3
4 of 8		

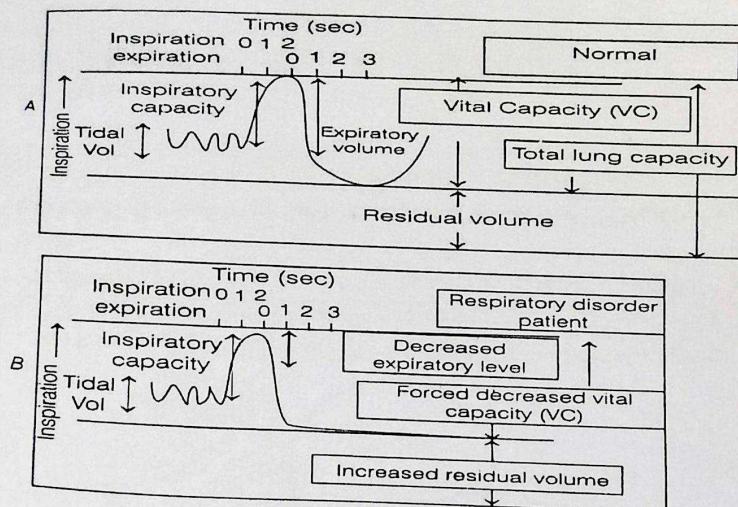
23.	Illustrate taxonomical hierarchy with suitable examples each from plant and animal species.	3
24.	Given below are three organism. Answer the following questions based on your understanding of their location in animal kingdom.    A B C i. Identify the most probable Phylum for each of the organisms (A, B, C). Support your identification by identifying one specific feature shown in the diagram for each organism that is diagnostic for its classification. ii. Compare the primary mode of respiration in Organism B and Organism C, as suggested by their diagrams.	3
25.	Given below is a Venn diagram representing different kingdom as given by Whittaker. Based on your understanding of the classification system answer the questions given below.  i. Provide a concise explanation for why R.H. Whittaker's five-kingdom classification system separated Fungi from Plantae, despite both being traditionally grouped together. ii. Explain the fundamental difference in the mode of nutrition between Fungi and Animalia, despite both being heterotrophic. iii. Mention two characteristics that is similar in all three kingdom and can be placed in the central area of the diagram.	3
26.	i. Why are echinoderms considered closer to chordates than to other invertebrates? ii. Despite being soft-bodied, mollusks are one of the most diverse phyla. What features contribute to their success? iii. Explain the importance of pneumatic bones and air sacs in Aves.	3
27.	i. How does artificial system of classification prove to be disadvantageous for identification of plants? ii. What role does vascular plants paly in keeping the earth green? iii. The plant shown below is called the living fossil. Give reason for the statement. 	3

28. Draw a well-labelled diagram of a Bacteriophage. Explain the significance of its structure in viral replication. 3

SECTION D

Q29 and Q30 are case based questions. Each question has subparts with internal choice in one subpart

29. Read the paragraph given below and answer the following questions:
The first graph (A) below shows a normal spirometry pattern. The second graph (B) shows the results in a patient with respiratory disorder. Observe both graphs (A and B) carefully and answer the questions that follows. 4



- a. In the above graphs VC is the largest amount of air that a person can exhale forcefully. Decreased VC in the patient is indicating which problem?
b. Explain how respiratory disorder of the patient mentioned in ques (a) affects his vital capacity?

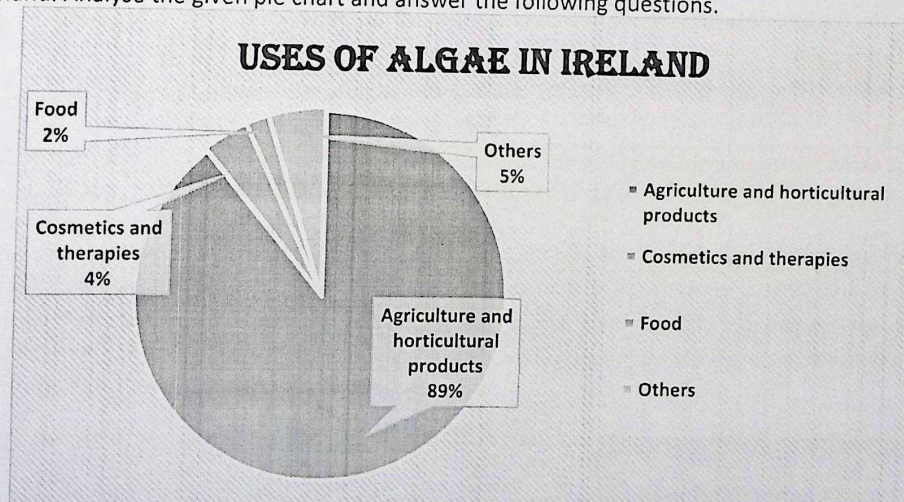
Attempt either subpart c or d

- c. Name the causes of occupational respiratory disorders and their effects.

OR

- d. Why does emphysema cause an increase in residual volume?

30. The pie chart given below shows a representation of various areas where algae can be used and are being used in Ireland. Analyse the given pie chart and answer the following questions. 4



- a. *Chlorella* a green alga, has marked its use in the field of agriculture and horticulture. Name another alga that can replace *Chlorella* in the field of agriculture.
b. A farmer noticed deficiency of potassium in the soil due to which he faced a decline in the crop productivity. He opted for biological methods. Name the algae that can make the soil rich in potassium content. Will this provide any benefit to the farmer otherwise?

Attempt either subpart c or d

c. Algae provide valuable nutrients to human diet. Comment.

OR

d. Comment upon the use of agar-agar in food preparation.

SECTION E

31. **Attempt either option A or B**

A. i. "Bryophytes are often referred to as 'amphibians of the plant kingdom'." Justify this statement with relevant reasons.

ii. A student observes a plant with naked seeds and well-developed vascular tissues. To which group of the plant kingdom does this plant most likely belong? Explain your reasoning.

iii. Discuss the evolutionary advancements observed from algae to angiosperms in terms of reproduction and adaptation to terrestrial life.

OR

B. i. Heterospory is considered a significant evolutionary step in the plant kingdom. Explain why.

ii. If a new plant species is discovered that exhibits both independent sporophyte and gametophyte generations, but lacks true roots, stems, and leaves, what classification challenges would it pose, and how might it be categorized?

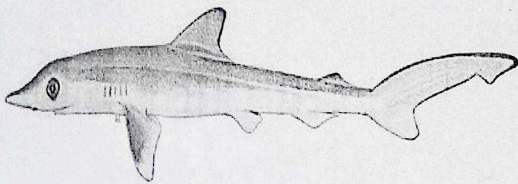
iii. Differentiate between *Porphyra* and *Sargassum* based on modes of reproduction and cell wall composition.

32. **Attempt either option A or B**

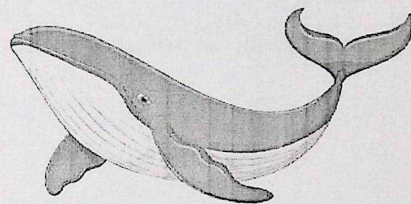
A. i. A student observes an organism that exhibits radial symmetry, has a water vascular system, and possesses tube feet. Identify the phylum and explain the diagnostic features that differentiate it from Cnidarians.

ii. There has been an increase in the number of chambers in the heart during the evolution of vertebrates. Give reason to justify this statement.

iii. Although both the organism A and B shown below are aquatic, they have certain differences. Point out two such differences.



A



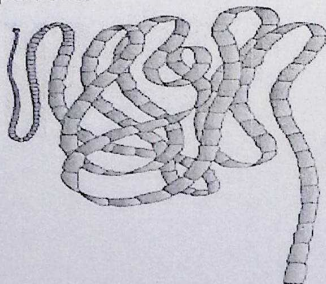
B

OR

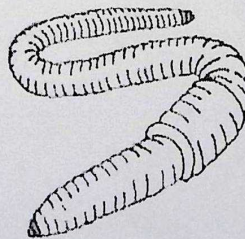
B. i. What is the role of proboscis gland in *Saccoglossus*?

ii. Endoparasites are found inside the host body. Mention the special structure, possessed by these and which enables them to survive in those conditions.

iii. Given below are two organisms A and B with wormlike body yet they exhibit significant differences in their body plan organization and specialized structures. Compare and contrast these two phyla, highlighting two major anatomical/physiological differences that reflect their distinct evolutionary paths and ecological adaptations.



A



B

33. **Attempt either option A or B**

A. i. A major percentage of O_2 is transported by RBCs in the blood. How does the remaining three percent of O_2 is transported?

ii. Compared to O_2 , diffusion rate of CO_2 through the diffusion membrane per unit difference in partial pressure is much higher. Explain.

iii. Explain the transport of O_2 and CO_2 between alveoli and tissue with diagram.

OR

B. i. A person dies in an accident in which his chest cavity is punctured but no lung damage was found. Explain his cause of death.

ii. A person travelled to Delhi which is highly polluted. Explain how his respiration will be regulated to maintain proper O_2 - CO_2 levels.

iii. Explain the mechanism of breathing with neat labelled sketches.