विद्या सर्वार्थ साधिका

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PERIODIC TEST - 1

Class: XI

Subject: Biology (044) MM: 40

Date : 16-07-2025 Time: 1 Hr. 30 min.

General Instructions:

1. There are 20 questions in all. All questions are compulsory.
2. This question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory.
3. Section A consists of ten MCQs and two Assertion and Reason questions of 1 mark each, Section B consists of two questions of 2 marks each, Section C consists of two questions of 3 marks each, Section D consists of two long questions of 5 marks each and Section E consists of two case study based questions of 4 marks each.
4. There is no overall choice. Draw neat diagrams wherever necessary.

SECTION A

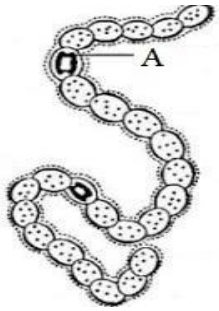
1. The study of different kinds of organisms and their diversities and also the relationship among them referred to as _____. (1)

   (A) category (B) systematics
   (C) classifications (D) publication

2. Viroids differ from viruses in being _____. (1)

   (A) naked RNA molecules.
   (B) naked DNA molecules.
   (C) naked DNA packaged with viral genomes.
   (D) satellite RNA packaged with viral genome.

3. Which of the following statement is correct with respect to 'A' in the given diagram? (1)



   (A) Mucilaginous sheath and is also found in Rivularia.
   (B) Mucilaginous sheath and is also found in Anabaena.
   (C) Heterocyst and is also found in methanogens.
   (D) Heterocyst and is also found in Anabaena.

4. Identify the incorrect statement. (1)

   (A) Class like Mammalia is involved in phylum Chordata.
   (B) Order like Insecta is involved in class Mandibulata.
   (C) Order like *Panthera* is involved in family Felidae.
   (D) Order like Primata is involved in class Mammalia

5. Volvox and Polysiphonia are members of algal class, A and B respectively. Which of the following statement is correct? (1)
   (A) Cellulose and algin are cell wall components of members of A.
   (B) Floridean starch is stored material in B.
   (C) Chlorophyll a, c and fucoxanthin are the photosynthetic pigments found in class A.
   (D) Two unequal flagella are found in members of B.

6. Which of the following correctly represents the order and family of wheat (*Triticum aestivum*)? (1)
   (A) Poaceae, Monocotyledonae (B) Poaceae, Poales
   (C) Poales, Monocotyledonae (D) None is correct

7. The foot, seta and capsule together form the sporophyte structure of _____. (1)
   (A) gametophyte in bryophytes (B) sporophyte in pteridophytes
   (C) sporophyte in bryophytes (D) gametophyte in angiosperms

8. Which of the following species does not belong to the genus Solanum? (1)
   (A) tabacum (B) tuberosum
   (C) nigrum (D) melongena

9. Red tides are caused by _____. (1)
   (A) red algae (B) dinoflagellates
   (C) slime moulds (D) chrysophytes

10. Heterosporous pteridophytes show certain characteristics, which are precursor to the 'seed habit' in gymnosperms. Identify one of such characteristics from the following: (1)
   (A) Presence of vascular tissues.
   (B) External water required for fertilisation.
   (C) Presence of embryo stage.
   (D) Development of embryo inside the female gametophyte.

For questions 11 and 12, two statements are given, one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.
(A) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(B) Both Assertion and Reason are true but Reason is NOT the correct explanation of Assertion.
(C) Assertion is true but Reason is false.
(D) Assertion is false but the Reason is true.

11. (A): The order for mango is Sapindales. (1)
   (R): Wheat belongs to the class Dicotyledonae.

12. (A): Neurospora is Drosophila of plant kingdom. (1)
   (R): It is widely used in genetic and biochemical work.

SECTION B

13. Differentiate between red algae and brown algae based on their key characteristics. (2)

14. What is the most common liverwort? Draw its well-labelled diagram. (2)

SECTION C

15. Name the groups under Kingdom Fungi based on mode of spore formation. Write one characteristic and one example of each. (3)

16. The male and female reproductive organs of several pteridophytes and gymnosperms are comparable to floral structures of angiosperms. Make an attempt to compare the various reproductive parts of pteridophytes and gymnosperms with reproductive structures of angiosperms. (3)

SECTION D

17. A scientist discovers a unicellular organism in a hot sulphur spring. It lacks a true nucleus, has unique lipids in its cell membrane, and survives in acidic conditions. (5)
    (a) To which kingdom does this organism most likely belong? Justify your answer with at least three characteristics.
    (b) How does this group differ from eubacteria in terms of cell wall and habitat?
    (c) Why are such organisms significant in biotechnology?

18. The plant kingdom shows a wide range of diversity in structure and reproduction. Consider the following examples: Spirogyra, Funaria, and Selaginella. (5)
    (a) Assign each plant to its respective division and write two distinguishing features of each.
    (b) Among the three, which plant is considered to demonstrate an evolutionary step towards seed habit? Justify your answer.

SECTION E

19. Read the following text carefully and answer the questions that follow:
    R.H. Whittaker proposed a Five Kingdom Classification. The kingdoms defined by him were named Monera, Protista, Fungi, Plantae, and Animalia. The main criteria for classification used by him include cell structure, body organisation, mode of nutrition, reproduction and phylogenetic relationships. The three-domain system has also been proposed that divides the Kingdom Monera into two domains, leaving the remaining eukaryotic kingdoms in the third domain and there by a six kingdom classification. Earlier classification systems included bacteria, blue-green algae, fungi, mosses, ferns, gymnosperms and the angiosperms under 'Plants'. The character that unified this whole kingdom was that all the organisms included had a cell wall in their cells.

    (i) In the Five Kingdom Classification proposed by R.H. Whittaker, which of the following is a distinguishing feature of the Kingdom Monera? (1)
    (A) Presence of a true nucleus (B) Presence of chloroplasts
    (C) Prokaryotic cell structure (D) Multicellular organisms

    (ii) Which of the following organisms was incorrectly grouped under the Plant kingdom in earlier classification systems? (1)
    (A) Blue-green algae (B) Ferns
    (C) Fungi (D) Gymnosperms

    (iii) The introduction of the three-domain system splits the Kingdom Monera into which two domains? (1)
    (A) Eukarya and Archaea (B) Eubacteria and Archaea
    (C) Eukarya and Bacteria (D) Prokarya and Eukarya

    (iv) Which of the following was a common feature of the organisms classified under the 'Plants' kingdom in earlier systems? (1)
    (A) Ability to undergo sexual reproduction
    (B) The presence of a cell wall
    (C) Presence of vascular tissues
    (D) Presence of chlorophyll for photosynthesis

20. Plants have evolved various structural and reproductive adaptations to thrive in different environments. In primitive plant groups, fertilisation is water-dependent, while advanced groups have internal fertilisation and produce seeds. Vascular tissues also evolved gradually, enabling efficient transport and structural support. Seeds further improved the survival rate of offspring by protecting the embryo and aiding in dispersal. The presence of true roots, stems, and leaves is considered a major advancement, allowing plants to colonise land more effectively.

(a) Which plant group represents a transitional stage between non-vascular and seed-bearing plants? (1)

(b) What is one advantage of seed formation over spore formation in plants? (1)

(c) Mention any two features that show evolutionary advancement from bryophytes to pteridophytes. (2)

OR

(c) Why is internal fertilisation considered an advanced adaptation in plants?