विद्या सर्वार्थि साधिका

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PERIODIC TEST -1

Class : 11

Subject: Biology MM : 70

Date : 21-09-2022 Time: 3Hrs.

General Instructions:

1. There are 31 questions in this question paper with sections A,B,C,D and E.
2. Section A has Q. No. 1 to 4 based on case, MCQs or assertion reason type questions. Each carries one mark.
3. Section B has Q. No. 5 to 18 which are which are MCQs and carry 1 mark each.
4. Section C has Q. No. 19 to 23 which are also short answer questions and carry 2 marks each.
5. Section D has Q. No. 24 to 28 which are long answer type (1) question and carry 3 marks each.
6. Section E has Q. No. 29 to 31 which are long answer type (1I) questions and carry 5 marks each.
7. There is no overall choice. However, internal choice has been provided.

1. Although there is a bewildering diversity of living organisms, their chemical composition and metabolic reactions appear to be remarkably similar. The elemental composition of living tissues and non-living matter appear to be similar when analysed qualitatively. There are thousands of low molecular weight biomolecules. There are 21 types of amino acids and 5 types of nucleotides. Apart from these there are 3 types of macromolecules that constitute the living body.
Based on the knowledge on the above topic, answer the four questions given.

   i. Among the given biomolecule, which one is a macromolecule? (1)
   A. Protein B. Amino Acid C. Monosaccharide D. Disaccharide

   ii. Alkaloids and flavanoids produced by plants are ____ (1)
   A. Primary metabolites C. Secondary metabolites
   B. Tertiary proteins D. Amino acids

   iii. Among the following substances, _____ the most abundant organic compound in nature. (1)
   (A) Inulin (B) Celluose (C) DNA (D) Glycogen

   iv. Among the following chemicals, which is not an amino acid? (1)
   (A) Tryptophan (B) Arginine (C) Glycine (D) Adenine

   In the following questions, two statements are given - one labeled Assertion (A) and the other lablled Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below:
   (A) Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
   (B) Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
   (C) Assertion (A) is correct, but Reason (R) is incorrect statement.
   (D) Assertion (A) is incorrect, but Reason (R) is correct statement.

2. i. Assertion: Gram staining is a widely practised technique to classify the bacteria. (1)
   Reason: After staining, gram positive bacteria retain the stain whereas gram negative bacteria lose the stain.

   ii. Assertion: Some molecules are transported across the plasma membrane against concentration gradient. (1)
   Reason: In active transport, energy is utilised, in the form of ATP.

iii. Assertion: Cells are formed *de novo* from abiotic materials. (1)
Reason: Cells of all living organisms do not have a well defined nucleus.

iv. Assertion: Multicellular organisms have division of labour. (1)
Reason: Multicellular organisms have organ systems, organisms and tissue in them.

3. i. Assertion: In frogs, copulatory pads lie on the pollex digit. (1)
Reason: The copulatory pads helps in transfer of sperms.

ii. Assertion: Mating call is produced by the male frog. (1)
Reason: Vocal sacs of male frog acts as the resonators.

iii.Assertion: Frogs respire on land and water by two different methods. (1)
Reason: Frogs are called Amphibians.

iv.Assertion: The nitrogenous waste in frog is urea. (1)
Reason: Frog is known as urecotelic organism.

4. i. Assertion: Algae are characterized by multicellular sex organs in which every cell forms a gamete. (1)
Reason: Sexual reproduction in algae is only of oogamous type.

ii. Assertion: Protonema of Funaria resembles green algae. (1)
Reason: It forms antheridia and archegonia.

iii. Assertion: In angiosperms, the conduction of water is more efficient because of xylem vessels. (1)
Reason: Conduction of water by vessels is an active process with energy supplied by xylem parenchyma rich in mitochondria.

iv. Assertion: Chlorella could serve as a potential source of food and energy. (1)
Reason: When dried, Chlorella has 45% fat, 15% protein, 10% carbohydrate, 20% fibre, 10% minerals and vitamins.

5. Analyse Whitaker's 5 K classification and find out which statement not true with his system of classification? (1)
(A) It separated fungi from plants.
(B) Bacteria and Blue green algae were put together in on group.
(C) Viruses were given a status as Kingdom.
(D) Fungi were given kingdom status

6. Examine the following statements and select the one which is unique to mitosis and which is not a part of meiosis. (1)
(A) Homologous chromosomes behave independently.
(B) Chromatids separate during anaphase.
(C) Homologous chromosomes pair and form bivalents.
(D) Homologous chromosomes cross over.

7. Analyse sequentially the events of meiosis and select the event that takes place during diplotene of prophase-1 of meiosis. (1)
(A) Compaction of chromosomes
(B) Formation of synaptonemal complex
(C) Formation of recombination nodules
(D) Dissolution of synaptonemal complex

8. One of the following represents the function of protein, other than enzymes and structural protein. (1)
(A) As antibiotics (C) As hormones
(B) As pigments (D) As steroids

9. Which cell organelle is present in more number in secretory cells? (1)
(A) Dictyosomes (B) Vacuoles
(C) Lysosomes (D) Endoplasmic reticulum

10. The cloacal aperture in frog is___ (1)
(A) The urinary opening (C) Opening of the digestive cavity
(B) The urenogenital opening (D) Common opening of urino- genital- digestive

11. The group fungi that are called fungi imperfecti is_____ (1)
(A) Ascomycetes (C) Deuteromycetes
(B) Zygomycetes (D) Basidiomycetes

12. Which of the following is an edible fungus? (1)
(A)Mucur (B) Penicillium (C) Agaricus (D) Rhizopus

13. If the number of chromosomes n a root cell is 14, the the chromosome number in synergids will be ____ (1)
(A) 14 (B) 21 (C) 7 (D) 28

14. Glycogen is a homopolymer made up of ___ (1)
(A) Glucose units (B) Galactose units (C) Ribose units (D) Amino acids

15. The fluid-mosaic model of plasma membrane was proposed by_____. (1)
(A) Singer and Nicolson (C) Davidson and Danielli
(B) Watson and Crick (D) Robertson

16. Frogs are beneficial to human as they ___. (1)
(A) are part of ecosystem (C) they control the pests
(B) part of human diet (D) keep balance in ecosystem

17. Which is the female gametophyte in angiosperms? (1)
(A) Embryo sac (C) Ovule
(B) Pollen grain (D) Ovary

18. A Phylum common to unicellular animals and plants is___ (1)
(A) Monera (B) Plantae (C) Fungi (D) Protista

Commented [a1]:

19. What is the significance of meiosis? Write any four points. (2)
OR
What is the significance of mitosis? Write any four points.

20. When wool or hair is burnt, there is a typical smell that we can feel. What kind of chemical reaction occurs here? Explain. (2)

21. Often urea fertilizer is added to plants. When it is added to potted plants, it is dissolved in water and diluted and added. Mention the reason for this. (2)

22. Why is frog called poikilotherm? What is meant by camouflage? (2)

23. Are viruses living or non-living? Examine the points as per your answer. Name any four organisms observed by you in your school campus other than angiosperms. (2)

24. Both gymnosperms and angiosperms are seed bearing plants. Then why are they classified separately? Justify your answer by suggesting scientific criteria for classification. (3)

25. (a) Does mitosis has any role in evolution? Explain. (3)
(b) What is the application of studying cell cycle?

26. (a) Define metabolism. (3)
(b) Which are the two types of metabolism?
(c) What is the role of enzymes in metabolism?

27. Explain digestion in frog explaining the anatomical structure of its digestive system. (3)

28. A research student prepares karyotype of a person in her lab. What aspects about the cytogenetics of the person's genome may be revealed through this? Name another technique which is used for similar studies. (3)

29. You are the secretory of the Eco club of your school. You would like to develop a botanical garden in the school so that it is beneficial to the biology students. (5)
(a) Which groups of plants will you include in the garden so that it is a scientifically designed taxonomic aid?
(b) Write botanical names of any four angiosperms you would like to have in the garden.

OR

(a) Write any two economic importance of the following groups of organisms:
i. Angiosperms. ii. Algae iii. Lichen
(b) Classify Bryophyta into their major groups giving examples and their salient features.

30. (a) Which are the criteria considered for classifying fungi by R. H. Whittaker? (5)
(b) Which are the major groups of fungi?
(c) What was the drawback of Linnaeus' system of classification?

OR

(a) Which criteria are considered for classifying algae?
(b) Explain each group giving their salient features and examples.
(c) What do you mean by haplo-diplontic life cycle?

31. (a) List the main differences between mitosis and meiosis. (5)
(b) Represent the metaphase stage of mitosis diagramatically. Label the diagram.
(c) Distinguish cytokinesis from karyokinesis.

OR

(a) How does cytokinesis in plant cell differ from animal cell?
(b) Represent chiasmata formation diagramatically and label the parts.
(c) Distinguish anaphase of mitosis from anaphase-1 of meiosis.