BUDHA DAL PUBLIC SCHOOL, PATIALA
First Term Examination (9 September 2024)
Class XI (Science)
Subject – Biology (Set - A)

M.M. 70

Time: 3hrs.

General Instructions:

(i) All questions are compulsory.
(ii) The question paper has five sections and 33 questions. All questions are compulsory
(iii) 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.
(iv) 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
(v) Wherever necessary, neat and properly labelled diagrams should be drawn.

Section - A

Q1. Identify the group of organisms, the following statements describe and refer to
A) There is no cell wall, but they have a protein – rich layer, called pellicle, which makes their body flexible.
B) They have two flagella, one very short and one long.
C) They are photosynthetic in the presence of sunlight and are predators in the absence of light.
D) They have pigments similar to higher plants

Options – a) Dinoflagellates b) Euglenoids c) Chrysophytes d) Protozoans

Q2. Phycoerythrin, chlorophyll a and chlorophyll d are characteristics of
a) Chlorophyceae b) Rhodophyceae c) Phaeophyceae d) cyanophyceae

Q3. Match Column I with Column II and select the correct option:

Column I	Column II
A) Limbless amphibian	1. Limulus
B) Flightless bird	2. Petromyzon
C) Jawless vertebrate	3. Ichthyophis
D) Living fossil	4. Pterophyllum
	5. Struthio

Options:
a) A – 3, B – 4, C – 2, D – 1
b) A – 4, B – 3, C – 2, D – 1
c) A – 3, B – 5, C – 2, D – 1
d) A – 4, B – 5, C – 1, B – 2

Q4. The hardest part in a drupe is the
a) epicarp b) mesocarp c) stipules d) axillary buds

Q5. Hypodermis is sclerenchymatous in
a) dicot stem b) monocot stem c) dicot root d) monocot root

Q6. Mark the odd one in each of the following groups and select the correct option:
A) Vasa efferentia, Bidder's canal, Oviduct, Vocal sac.
B) Sinus venosus, Conus arteriosus, Vena cava, Ventricles.
C) Optic lobes, Olfactory lobes, Cerebral hemispheres, Diencephalon
D) Forelimbs, Four digits, Webbed – digits, Copulatory pad in male frog

Options:
a) A. Oviduct, B. Ventricles, C. Olfactory lobes, D. Forelimbs
b) A. Oviduct, B. Vena cava, C. Optic lobes, D. Webbed – digits
c) A. Vocal sac, B. Ventricles, C. Optic lobes, D. Forelimbs
d) A. Vocal sac, B. Vena cava, C. Diencephalon, D. Webbed - digits

Q7. Which of the following is not a function of cytoskeleton in a cell?
a) Intracellular transport
b) Maintenance of cell shape and structure
c) Support of the organelle
d) Cell motility

Q8. In a maize plant, the conversion of pyruvate into PEP occurs in
a) epidermal cells b) bundle sheath cells c) guard cell d) mesophyll cells

Q9. Which of the following processes in cellular respiration directly uses oxygen?
a) Glycolysis b) Electron transport c) Kreb's cycle d) Alcohol fermentation

Q10. In the taxonomic hierarchy, class is a taxon that comes between
a) genus and family b) family and order c) order and phylum d) phylum and kingdom

Q11. Identify the correct statements and select the option with correct statements :
A. Sexual reproduction is oogamous in Volvox and Fucus
B. Marchantia and Pinus are dioecious
C. All gymnosperms are heterosporous
D. Gametophytes are free-living and independent in Pinus, liverworts and Dryopteris
E. The sporophyte or Sphagnum is dependent on the gametophyte.

a) A, B and D b) A, C and E c) B, C and E d) A, D and E

Q12. Given below are the various structural modifications of ER and their characteristics
I) Cisternae – Arranged parallel to each other to form lamellae
II) Tubules – Usually associated with ribosomes
III) Vescicles – Round isolated sacs, free of ribosomes
Choose theoption containing incorrectly matched pair(s).
a) only I b) II and III c) only II d) I and III

Two statements are given - one labelled Assertion (A) and the other labeleld 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 the reason is correct explanation of the assertion.**
b) **Both assertion and reason are true, and the reason is not the correct explanation of the assertion.**
c) **Assertion is true but reason is false.**
d) **Both assertion and reason are false.**

Q13. **Assertion :** In Basidiomycetes, the dikaryotic cells represent an intermediate stage between plasmogamy and karyogamy.
Reason : Sexual reproduction in fungi involves plasmogamy, karyogamy and meiosis.

Q14. **Assertion :** The trichomes in the shoot system are usually multicellular, branched or unbranched
Reason : The trichomes help in absorbing the moisture in the atmosphere for the plants.

Q15. **Assertion :** It is said that the content of nucleolus is continuous with the rest of the nucleoplasm.
Reason : There is no membrane – boundary for the nucleolus.

Q16. **Assertion :** Yeast produces ethyl alcohol during anaerobic respiration.
Reason : Yeast cells are killed when the concentration of alcohol produced by fermentation beyond a certain limit.

Section - B

Q17. Both liverworts and mosses are bryophytes: yet, there are differences between them. Bring out any four differences between the two.

Q18. Classify the following as warm-blooded and cold-blooded organisms: Rana, Scoliodon, Penguin, Blue-whale.

Q19. What is a mesosome in a prokaryotic cell? Mention the functions that it performs.

Q20. By looking at which internal structure of a plant can you tell whether a plant is C_3 or C_4? Explain.

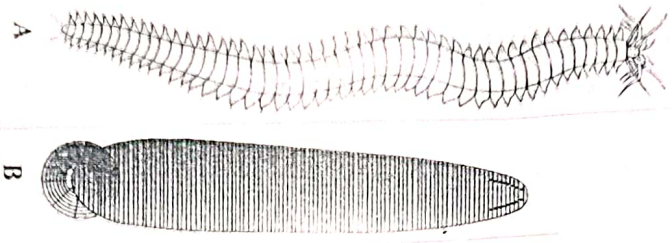
Q21. a) The energy yield in terms of ATP is higher in aerobic respiration than during anaerobic respiration. Give reason
b) Why is there anaerobic respiration even in organisms that live in aerobic condition like human beings and angiosperms?

Section – C

Q22. a) Give reasons for each of the following:
i) Bryophytes are called amphibians of plant kingdom
ii) The plant body or the dominant stage is called gametophyte.
b) Where does (i) the protonema and (ii) the leafy gametophyte of mosses develop from?

Q23. Frog is a poikilotherm, exhibits camouflage and undergoes aestivation and hibernation, how are all these beneficial to it?

Q24. Two animals of Phylum Annelida are shown in the picture given below. Observe them and answer the questions that follow:



a) Identify and write the scientific names of the animals A and B
b) Write two major differences between them.
c) What is the mode of nutrition of B?

Q25. a) Differentiate between recemose and cymose inflorescence.
b) What is phyllotaxy? Name the type of phyllotaxy found (i) Mustard, (ii) Alstonia and (iii) Calotropis

Q26. T.S. of dicot stem and monocot stem are provided to you. How would you differentiate them pertaining to the following :
a) Kind of tissue that constitutes hypodermis
b) Arrangement of vascular bundles
c) Presence or absence of cambium

Q27. Explain cyclic photophosphorylation along with its pathway.

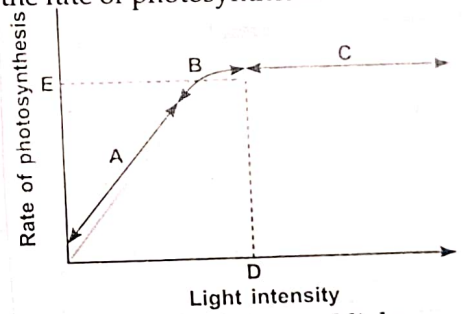
OR

a) Name the end products of fermentation
b) Write the role of oxygen in the electron transport system
c) What is respiratory quotient? What is the RQ for fat?

Q28. The improved model of the structure of cell membrane proposed by Singer and Nicolson (1972), is called fluid mosaic model. The fluid nature of the membrane is important from the point of view of certain functions.
a) What is mean by fluidity of membrane?
b) Mention any four functions for which the fluid nature of the membrane is necessary.
c) How are the lipids arranged in the cell membrane? What is its significance?

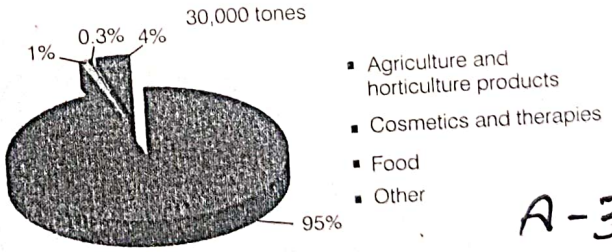
Section – D

Q29. The figure given below shows the effect of light intensity on the rate of photosynthesis.



Based on the graph, answer the following questions:
a) Give two reasons, why there is no increase in the rate of photosynthesis, beyond light intensity at D.
b) Mention any two factors that could be limiting at point A.
c) What does E represent?
d) What does D indicate?

Q30. 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:



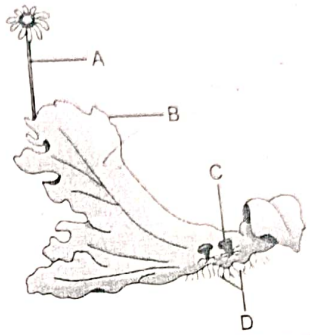
a) Chlorella a green algae, has marked its use in the field or agriculture and horticulture. Name another algae that can replace Chlorella in the field of agriculture.
b) What is another name of brown algae? Write its two features.
c) Algae provide valuable nutrients to human diet. Comment.

OR

c) Comment upon the use of agar-agar in food preparation.

Section - E

1. **Observe the diagram and answer the questions that follow:** →



a) Identify the plant given above and name the division, it belongs to
b) Label the parts A, B, C and D marked on it
c) Give a brief description of part C.

OR

a) What do you mean by metagenesis? Give one example of animal that shows metagenesis. Write the phylum to which it belong and peculiar feature of that phylum.
b) Provide appropriate technical term for the following:
   i) Blood-filled cavity in arthropods
   ii) Free-floating form of Cnidaria
   iii) Stinging organ of jelly fishes
   iv) Lateral appendages in aquatic annelids

Q32. Describe the arrangement of floral members in relation to their insertion on thalamus alongwith labelled diagrams.

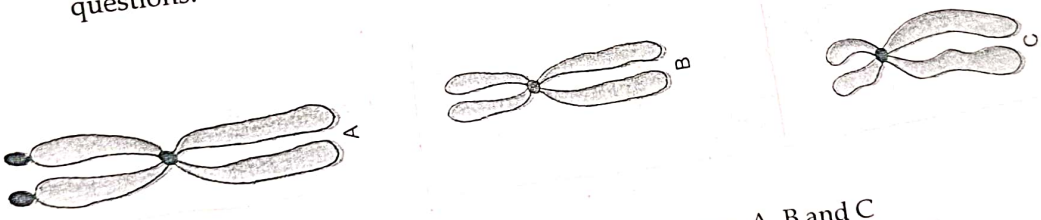
OR

Describe the various type of placentation found in flowering plants alongwith diagrams.

Q33. Where does Calvin cycle takes place? Describe its three phases along with flow chart

OR

a) Three types of chromosomes are shown in the figure given above. Answer the following questions:



i) Identify and name the types of chromosomes, A, B and C
ii) What forms the basis for such a classification of chromosomes?
iii) What are kinetochores?

b) Draw a well labelled diagram of T.S. of cilia

A-H

B-1