

BUDHA DAL PUBLIC SCHOOL, PATIALA
Final Examination (1 March 2024)

Class XI (Science)
Subject - Biology
(Set - A)

Time: 3hrs.

M.M. 70

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 labeled diagrams should be drawn.

Section - A

- Q1. In which group of organisms, the cell wall forms too thin overlapping shells which fit together?
a) slime mould b) chrysophytes c) euglenoids d) dinoflagellates
- Q2. Mantle Cavity in molluscs is the space between
a) visceral hump and mantle
b) mantle and muscular foot
c) muscular foot and visceral hump
d) mantle and radula
- Q3. In a monocot stem
a) pith and cortex are well-differentiated
b) vascular bundles are scattered in the ground tissue
c) vascular bundles are closed and endarch
d) both (b) and (c)
- Q4. The number of ATP and NADPH₂ molecules required for fixing one molecule of CO₂ in calvin cycle is
a) 1 ATP, 2 NADPH₂ b) 2 ATP, 3 NADPH₂ c) 3 ATP, 2 NADPH₂ d) 2 ATP, 2 NADPH₂
- Q5. Grave's disease, characterized by increased basal metabolic rate is caused by
a) Hyposecretion of thyroid glands
b) Hyposecretion of thyroid glands
c) Hypersecretion of adrenal glands
d) Hyposecretion of adrenal glands
- Q6. Match the Column

Column - I	Column - II
A) Golgi apparatus	(i) Synthesis of protein
B) Lysosomes	(ii) Trap waste and excretory products
C) Vacuoles	(iii) Formation of glycoproteins and glycolipids
D) Ribosomes	(iv) Digesting biomolecules

- a) A (iii), B (iv), C (ii), D (i) b) A (iv), B (iii), C (i), D (ii)
- c) A (iii), B (i), C (iv), D (ii) d) A (i), B (ii), C (iv), D (iii)

A-1

- Q7. The bond formed between the monomers in a polysaccharide is
 a) Peptide bond b) Glycosidic bond c) Ester bond d) Phosphodiester bond
- Q8. During cell division, the spindle fibres attach to _____ of the chromosomes.
 a) chromatid b) kinetochores c) centromere d) satellites
- Q9. A meiocyte produces daughter cell with 16 chromosomes each. What is the number of chromosomes in the meiocyte.
 a) 24 b) 16 c) 32 d) 24
- Q10. Free-central placentation differs from axile placentation in that
 a) Placenta is axial and septa are present (multilocular)
 b) Placenta is axial, but the septa are absent
 c) Placenta and ovules are present on the inner wall of ovary
 d) Placenta and ovules are present on the ridge formed along the ventral suture
- Q11. Metameric segmentation is characteristic of
 a) Mollusca and Chordata b) Annelid and Arthropoda
 c) Aschelminthes and Chordata d) Echinodermata and Arthropoda
- Q12. If RQ is less than one in the respiratory metabolism, it means that
 a) the volume of oxygen consumed for oxidation is more than that of CO₂
 b) the volume of oxygen consumed for oxidation is much less than that of CO₂
 c) a carbohydrate is the respiratory substrate
 d) an organic acid is the respiratory substrate

Each of the following questions (Q.No. 13 to Q.No 16) consists of two statements, one is Assertion (A) and the other is Reason (R). Give answer:

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

- Q13. Assertion : Platyhelminthes are generally hermaphrodites.
 Reason : In platyhelminthes, fertilization is internal.
- Q14. Assertion : The quasifluid nature of liquid enables lateral movement of proteins within the overall bilayer.
 Reason : The ability to move within the membrane is called fluidity and is important for cell growth.
- Q15. Assertion : The first product of CO₂ fixation in C₃ pathway is OAA.
 Reason : The first product of CO₂ fixation in C₄ pathway is PGA.
- Q16. Assertion : Thyroid hormones promote physical growth and development of mental faculties.
 Reason : Hypothyroidism in adults causes retarded sexual development.

Section - B

- Q17. Prothallus of the fern, Dryopteris is monoecious. Justify.
- Q18. Define perigynous. Give example.

- Q19. How are nuclear pores formed? What is their significance?
- Q20. Name the PGR (Plant growth regulator) you should use to
- Increase yield of sugarcane
 - Inhibit seed germination
 - Name two natural auxins
- Q21.
- Write the cranial meninges that cover the brain.
 - What are the components of Lymbic System (any two)

Section - C

- Q22.
- Differentiate between Homosporous and heterosporous pteridophytes
 - Where does reduction division take place in the life cycle of (i) Liverworts (ii) Fern
- Q23. Define : (a) Apoenzyme (b) Cofactor
- Q24. Explain action potential of nerve impulse with the help of diagram.
- Q25. Explain Renin - Angiotensin mechanism for regulation of kidney.
- Q26. Explain how ATP synthase (complex V) helps in the synthesis of ATP in mitochondria with the help of diagram.
- Q27. Explain female reproductive system of Frog with the help of diagram.
- Q28. How does planaria differ from Ascaris. Name the phylum to which each of them belong to.

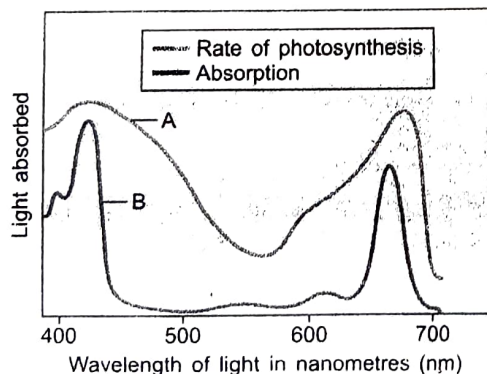
OR

Petromyzon, scolidon and labeo are all fishes, but they are placed in three different classes of chordate.

- How does petromyzon differ from the other two?
- Name the classes which each of them belongs to

Section - D

- Q29. In the following figure, the curve A represents the rate of photosynthesis while the curve B represents the absorption spectrum of chlorophyll a. Observe the graph and answer the questions that follow:



- Who first plotted the action spectrum? Name the organism he used for his experiments.
- What is absorption spectrum?
- Define action spectrum.
- Where in the visible spectrum of light, does maximum photosynthesis occur?
- How is the rate of photosynthesis measured for plotting action spectrum?

- Q30. Read the following and answer the questions that follow:

Animals accumulate nitrogenous wastes, carbon dioxide, water and some inorganic ions as metabolic wastes, which have to be eliminated totally or partially.

- Name the most toxic and the least toxic nitrogenous wastes.
- Kidneys do not play any significant role in the elimination of Ammonia. How is ammonia eliminated by animals?

- What term describes the animals which excrete (i) ammonia and (ii) urea, as their major nitrogenous wastes, respectively?
- How is carbon dioxide eliminated by human

Section - E

Explain Krebs cycle in detail with the help of schematic representation.

OR

- a) Explain cyclic photophosphorylation with the help of schematic representation.
- b) Explain the significance of Kranz anatomy in C_4 plants.

Q32. Describe the sequence of events which occur in the cardiac cycle - where and how are the sounds of lub and dub produced in the heart.

OR

- a) Explain oxygen dissociation curve. Can you suggest any reason for its sigmoidal pattern?
- b) What are the major transport mechanism for CO_2 ?

Q33. a) Name the sub stage of prophase I of meiosis for following event:

i) Crossing over ii) Synapsis iii) tetrad (iv) terminalisation of chiasmata

- b) Explain the steps of enzyme action during catalytic cycle.
- c) What is the effect of temperature and pH on the enzyme activity.

OR

- a) Name the phylum which was earlier considered as a sub-phylum of phylum chordata but now in a separate phylum under non chordate. Write any six characteristic features of the animals of this phylum. Give two examples.
- b) Differentiate between polyps and medusae.