

BUDHA DAL PUBLIC SCHOOL, PATIALA
First Term Examination (18 September 2023)

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 labeled diagrams should be drawn.

Section A

Q1) Which of the following algae are used for the production of agar

- a) laminaria and Sargassum b) Gelidium and Gracilaria
c) Chlorella and Spirulina d) Gelidium and Laminaria

Q2) Dikaryotic stage is found in which of the following

- a) ascomycetes and basidiomycetes b) phycomycetes and basidiomycetes
c) basidiomycetes and phycomycetes d) basidiomycetes and deuteromycetes

Q3) Which of the following about certain given animals is correct?

- a) Round worm are pseudocoelomates b) Molluscs are acoelomates.
c) Insects are Pseudocoelomates d) Flatworms are coleomates

Q4) Match the correct scientific names

- | | |
|-------------|----------------------|
| a) Man | 1) Mangifera indica |
| b) Mango | 2) Triticum aestivum |
| c) Housefly | 3) Musca domestica |
| d) Wheat | 4) Homo sapiens |

- a) a-2, b-1, c-3, d-4 (b) a-4, b-1, c-3, d-2 (c) a-2, b-3, c-4, d-1 (d) a-3, b-2, c-1, d-4

Q-5) what is the correct floral formula of Solanaceae family

- (a) $\oplus \overset{\nearrow}{\sigma} K_{(5)} \overset{\curvearrowright}{C}_{(5)} A_5 \underline{G}_{(2)}$ (b) $\oplus \overset{\nearrow}{\sigma} K_{(5)} \overset{\curvearrowright}{C}_{(5)} A_5 \underline{G}_{(2)}$
(c) $\oplus \overset{\nearrow}{\sigma} K_5 \overset{\curvearrowright}{C}_{(5)} A_{(5)} \underline{G}_{(2)}$ (d) $\oplus \overset{\curvearrowright}{\sigma} K_{(5)} \overset{\curvearrowright}{C}_{(5)} A_5 \underline{G}_{(2)}$

Q-6) Which of the following statements is true for a secretory cell?

- (a) Golgi apparatus is absent
(b) Only Smooth Endoplasmic Reticulum (SER) is present
(c) Rough Endoplasmic Reticulum (RER) is easily observed in the cell
(d) Secretory granules are formed in nucleus

A-1

Q7) In frog, medulla oblongata continues into spinal cord through

- a) foramen magnum b) foramen ovale c) ostia d) ovalis

Q8) Which of the following ion is essential for photolysis of water?

- a) manganese b) zinc c) copper d) boron

Q 9) Anatomically, fairly old dicot root is distinguished from the dicot stem by

- a) absence of secondary xylem b) absence of secondary phloem
c) presence of cortex d) position of protoxylem

Q10) The jawless fishes are

- a) Trygon and Clarias b) Petromyzon and Exocoetus
c) Myxine and scolidon d) Petromyzon and Myxine

Q 11) Type of placentation found in Dianthus

- a) free central placentation b) marginal placentation
b) Parietal placentation d) axile placentation

Q12) Which of the following forms complex iv in ETS in the mitochondria?

- a) NADH –dehydrogenase b) succinate dehydrogenase
c) cytochrome bi complex d) cytochrome c oxidase

Directions: In the following questions, a statement of assertion is followed by a statement of reason.

Mark the correct choice as:

- (a) If both Assertion and Reason are true and reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If both Assertion and Reason are false.

Q13) Assertion: In flatworms, fertilisation is internal and development is through many larval stages.

Reason: Some parasitic flatworms absorb nutrients from the host directly through their body surface

Q14) Assertion -Isogamy is a primitive type of sexual reproduction.

Reason -The gametes are of different sizes.

Q15) Assertion: In alternate type of phyllotaxy, the arrangement of leaves is such that a single leaf arises at each node in alternate manner.

Reason: The alternate type of phyllotaxy is seen in china rose and mustard plant.

Q16) Assertion: Centrosomes and centrioles are related to each other.

Reason : Centrosome usually contains two cylindrical structures called centrioles

A-2

Section – B

- Q17. What are thermoacidophiles and halophiles?
Q18. Name the type of spores found in Selaginella and Salvia.
Q19. Define Pulvinus. Write the significance of petiole in plants.
Q20. Define mesosomes and write its functions.
Q21. How does RQ indicate which type of substrate is getting oxidised?

Section – C

- Q22.a) Differentiate between polyp and medusa.
b) Which animals exhibits the phenomenon of bioluminescence? Mention its phylum.
Q23. What is the predominant phase in the life cycle of a moss. Name its two stages.
Differentiate between the two stages.
Q24. Define the following terminology of flowering plants
a) syncarpous b) coleoptile c) zygomorphic
Q25.a) Differentiate between anatomy of dicot and monocot stem. (4 points)
b) What is the role of bulliform cells in grasses?
Q26. Explain female reproductive system of Frog with the help of diagram.
Q27.a) Draw a well labelled diagram of T.S. Flagella.
c) Define cristae of mitochondria

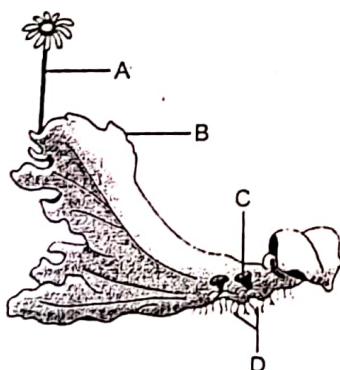
OR

Draw and explain following type of chromosome

- a) Submetacentric b) acrocentric d) telocentric
Q28. Draw a schematic representation of glycolysis.

Section – D

- Q29. 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.

A-3

Q30.

The fruit is a characteristic feature of angiosperms. It is a mature or ripened ovary, usually developed after fertilisation, with a few exceptions.

- (a) What are parthenocarpic fruits?
- (b) Identify the three parts, the pericarp can be differentiated into, when it is thick and fleshy as in mango. Name the edible part in mango.
- (c) Write the similarities between the fruits of mango and coconut.

Section – E

Q31.a) Explain the structure of following organelle

- 1) Mitochondria 2) Endoplasmic Reticulum
- b) Name the various types of leucoplast and nutrients it store

OR

- a) Draw and explain non cyclic photophosphorylation
- b) Differentiate between cyclic and non cyclic photophosphorylation

Q32.a) Explain with the help of labelled diagram Digestive System of Frog.

- b) How can a male Frog be distinguished from a female frog?

OR

Describe the arrangement of floral members in relation to their insertion on thalamus.

Q33.i) Name the phylum of animalia that possess.

- a) Nephridia and parapodia
- b) Jointed appendages and malpighian tubules
- ii) Write the salient features of phylum mollusca

OR

- a) Identify the division with following features: needle like leaves and bear cones.
- b) Explain the structure of male and female cone
- c) Which event in pteridophytes is the precursor to the seed habit and state its significance.

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

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

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. The imperfect fungi which are decomposers of litter and help in mineral cycling belong to
 a) ascomycetes b) deuteromycetes c) basidiomycetes d) phycmycetes
- Q2. Which of the following is correct for vascular bundle of dicot stem?
 a) Bundles are open and radial
 b) Bundles are closed and radial
 c) Bundle are open and conjoint
 d) Bundle are closed and conjoint
- Q3. Protonema is
 a) Haploid and is found in mosses
 b) Diploid and is found in liverworts
 c) Diploid and is found in pteridophytes
 d) Haploid and is found in pteridophytes
- Q4. Upto the end of kreb's cycle before the electron transport chain, the oxidation of one molecule of glucose has produced a net gain of
 a) $6\text{CO}_2 + 10\text{NADH}_2 + 2\text{FADH}_2 + 4\text{ATP}$ b) $6\text{CO}_2 + 8\text{NADH}_2 + 2\text{FADH}_2 + 4\text{ATP}$
 c) $3\text{CO}_2 + 10\text{NADH}_2 + 2\text{FADH}_2 + 2\text{ATP}$ d) $3\text{CO}_2 + 8\text{NADH}_2 + 2\text{FADH}_2 + 2\text{ATP}$

Q5. Match the following Column

Column - I	Column - II
a) Pituitary gland	(i) Grave's disease
b) Thyroid gland	(ii) Diabetes mellitus
c) Adrenal gland	(iii) Diabetes insipidus
d) pancreas	(iv) Addison's disease

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

- Q6. Which of the following cell organelles is present the highest number in secretory cells
 b) Golgi body b) Mitochondria c) chloroplast d) vacuole

B-1

- Q7. Identify the amino acid which is basic in nature
 a) Glutamic acid b) Lysine c) Valine d) Tyrosine
- Q8. Which of the following does not take place in G₁ phase?
 a) DNA synthesis b) RNA synthesis c) Protein synthesis d) Both (b) and (c)
- Q9. The chromosome number in the meiocyte is 24. What is the number of chromosome in the daughter cell?
 a) 24 b) 12 c) 48 d) None of the above
- Q10. Identify the correct statements and select the option with correct statement.
 A) In sunflower, the placenta develops from the base of the ovary to which only a single ovule is attached.
 B) Ovary is two chambered in Argemone
 C) Placenta is axial and ovary is multilocular with septa in Dianthus.
 D) Placentation is marginal in cucumber
 a) A and B b) A and C c) B and C d) B and D
- Q11. Which of the following characteristics of bony fishes is missing in cartilaginous fishes?
 a) Poikilothermic b) Operculum c) Two-chambered heart d) Paired fins
- 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 : Aschelminthes are called as pseudocoelomates.
 Reason : In Aschelminthes, mesoderm is present as scattered pouches in between ectoderm and endoderm.
- Q14. Assertion : The content of inner compartment of mitochondria is called matrix.
 Reason : The outer membrane forms a number of infolding called cristae.
- Q15. Assertion : In C₄ plants, photorespiration does not occur.
 Reason : C₄ plants have a mechanism that increases the concentration of CO₂ at the enzyme site.
- Q16. Assertion : Insulin stimulates glycogenolysis and gluconeogenesis resulting in hyperglycemia
 Reason : Prolonged hyperglycemia leads to complex disorder called diab etes insipidus.

Section - B

- Q17. Write an account on gemmae of liverwort.
- Q18. Stamens of brinjal are called epipetalous and that of lily are called epiphyllous. Justify.

B-2

- Q19. What is meant by 9 + 2 organisation of axonemal microtubules in a cilium/ flagellum?
- Q20. Which plant growth regulator can you use to
 a) Promote lateral shoot growth
 b) Cause sprouting of potato tuber
 c) Name two natural auxins
- Q21. What is limbic system? Mention its functions.

Section - C

- Q22. a) Differentiate between antheridium and archegonium of Bryophytes
 b) Where does (a) the protonema and (b) the leafy gametophyte of mosses develop from?
- Q23. Define : (a) Prosthetic group (b) co-enzyme with enzyme
- Q24. a) Draw a well labelled diagram of sarcomere.
 b) List the protein present in an thin filament.
- Q25. a) S.A. node is called pacemaker of heart. Why?
 b) Why do we call our heart myogenic heart?
 c) When do we hear the second heart sound?
- Q26. Explain any three assumptions that make it possible to calculate the net gain of ATP molecules for every molecule of glucose oxidised.
- Q27. Explain male reproductive system of Frog with the help of labelled diagram.
- Q28. Petromyzon, scolidon and labeo are all fishes, but they are placed in three different classes of chordate.
 a) How does petromyzon differ from the other two?
 b) Name the classes which each of them belongs to

OR

How does planaria differ from Ascaris. Name the phylum to which each of them belong to.

Section - D

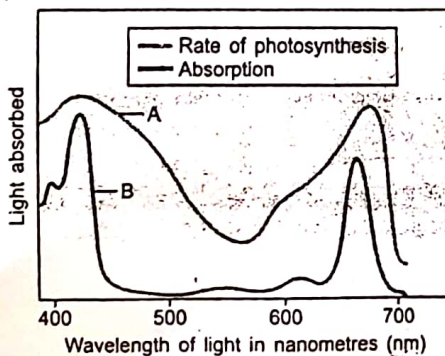
- Q29. Read the following and answer the questions that follow:

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

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

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

- Q30. 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:



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

B-3

Section - II

Q31. Explain Calvin cycle in detail with the help of a schematic representation.

OR

- a) Explain non cyclic photophosphorylation with the help of a 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. When and how are the sounds of 'lub' and 'dub' produced in the heart.

OR

Explain the following processes:

- a) Polarisation of membrane of a nerve fibres
 - b) Depolarisation of membrane of a nerve fibres
 - c) Transmission of nerve impulse across chemical synapse
- 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.