BUDHA DAL PUBLIC SCHOOL, PATIALA Final Examination (4 March 2025)

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

ime: 3hrs. eneral Instructions:

All guestions are compulsory.

- The question paper has five sections and 33 questions. All questions are compulsory
- 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.
- 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
-) Wherever necessary, neat and properly labelled diagrams should be drawn.

Section – A

- Presence of stiff cellulosic plates on the outer surface of cell wall, is a characteristic feature of

 a) Euglenoids
 b) Dinoflagellates
 c) Chrysophytes
 d) Slime moulds
- 2. Match the Column and select the correct option

Column – I	Column – II	
A) Chlamydomonas	(1) Colonial green alga	
B) Laminaria	(2) Filamentous green alga	
C) Volvox	(3) Rhodophyceae	
D) Ulothrix	(4) Sea kelp	
	(5) Unicellular green alga	

- a) A (5), B (4), C (3), D (2) b) A (5), B (4), C (1), D (2)
- c) A (4), B (3), C (2), D (1) d) A (4), B (1), C (5), D (3)
- O3. Androecium in Solanaceae
 - a) has five epipetalous stamens b) has five polyandrous stamens
 - c) has polyadelphous stamens d) has three long stamens and three short stamens
- Q4. As compared to a dicot root, a monocot root has
 - a) a large pith b) many xylem bundles c) thick periderm d) both (a) and (b)
- **Q5.** The structure present between the cell walls of two adjacent cells, is
 - a) stroma lamella b) microsome c) middle lamella d) mesogloea
- Q6. The most abundant protein in the biosphere is A and that in the animal world is B
 - a) A Collagen, B Casein
 - b) A Collagen, B Ribulose bisphosphate carboxylase oxygenase
 - c) A Ribulose bisphosphate carboxylase oxygenase, B Collagen
 - d) A Amylase, B Collagen
- Q7. 'Plants restore to the air, whatever the breathing animals and the burning candles remove'. Name the scientist who gave this statement.
 - a) Ingenhousz b) Priestley c) Julius von Sachs d) Englemann
- Q8. If RQ is less than one in the respiratory metabolism, it means that
 - a) the volume or oxygen consumed for oxidation is more than that of CO_2
 - b) the volume of oxygen consumed for oxidation is much less than that of CO_2
 - c) a carbohydrate is the respiratory substrate
 - d) an organic acid is the respiratory substrate
- Q9. In C4 plants RubisCo is present in
 - a) mesophyll cells b) epidermal cells c) bundle sheath cells d) all of these

A -1

Q10. Grave's disease, characterized by increased basal metabolic rate is caused by

- a) hypersecretion of thyroid glands
- b) hyposecretion of thyroid glands
- c) hypersecretion of adrenal glands
- d) hyposecretion of adrenal glands

Q11. A person breathes in some volume of air by forced inspiration after having a forced expiration. This quantity of air taken in is

a) total lung capacity b) tidal volume c) vital capacity d) inspiratory capacity

Q12. Match the Column I with Column II and select the correct option:

Column – I	Column – II	
A) Micturition	(1) Filtration of blood	2
B) Uremia	(2) Water reabsorption	
C) Bowman's capsule	(3) Haemodialysis	
D) ADH	(4) Angiotensin II	
.,	(5) Elimination of urine	

a) A (5), B (3), C (1), D (2) b) A (5), B (4), C (3), D (2)

c) A (4), B (3), C (1), D (2) d) A (4), B (3), C (2), D (1)

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 : Sino atrial node is described as the pacemaker of the heart. Reason : Sino – atrial node is situated in the right upper corner of the right atrium.
- Q14. Assertion : The electron transport chain occurs in the inner membrane of mitochondria. Reason : The proton gradient is formed across the inner mitochondrial membrane.
- Q15. Assertion : Cnidoblasts are characteristically present in Coelenterates. Reason : Cnidoblasts function like stem cells and can form any other cell types, when necessary.
- Q16. Assertion : Diplotene is characterized by the presence of chiasmata.

Reason: A cell can exist in the diplotene stages for months or years as in oocytes or some vertebrates.

Section - B

- Q17. Distinguish between the following:
 - a) Exarch and endarch condition of protoxylem b) Stele and vascular bundle
- Q18. Mitosis results in the production of two cells, which are similar to each other. What would be the consequence of each of the following irregularities that occurs during mitosis?
 - a) Nuclear membrane fails to disintegrate
 - b) Duplication of DNA does not occur
- Q19. All enzymes (except ribozymes) are proteins. An enzyme, like any other protein, has a primary, secondary and tertiary structure. The protein functions as enzyme in its tertiary structure, where active sites are formed.
 - a) What is active site of an enzyme?
 - b) How are active sites formed?

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Now does water stress affect/decrease the rate of photosynthesis?

OR

- a) Why is the lumen of the thylakoids acidic, while the stroma is alkaline?
- b) Why is a proton gradient necessary in photophosphorylation?

Q21. Name the type of joint between the following:

- a) atlas/axis
- b) carpal/metacarpal of thumb
- c) between phalanges
- d) femur/ acetabulum

Section - C

Q22. Describe the three commons steps in the sexual reproduction of fungi.

Q23. State condition in which the flowers are described as

a) Perigynous b) epigynous c) hypogynous

Give one example of each plant in which these flowers are found.

- Q24. Answer the questions with reference to the digestive system of frog:
 - a) Why is the alimentary canal of a frog short?
 - b) Name the two accessory digestive glands.
 - c) How is the absorption of digested food aided in the intestine?
- Q25. Draw well labelled diagram of T.S. of cilia.

Q26. Explain cyclic photophosphorylation along with its pathway.





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- a) What does the above diagram represent?
- b) What do the letters A, B, C and D represent?
- c) Which among them undergoes conformational changes?

Q28. Human beings have a significant ability to maintain and moderate the respiratory rhythm according to the demand of the body. Explain how it is achieved?

OR

What is resting membrane potential? Give the role of sodium-potassium pumps in maintaining it. How does the resting potential change into action potential?

Section - D

Q29. The diagram of a Nostoc filament is shown below. Observe the diagram and answer the questions that follow:



- a) Identify the cell labelled 'A'. What is its significance?
- b) Name the pigment that gives the organism the characteristic blue-green colour.
- () Mention its place/kingdom in the classification system proposed by R.H. Whittaker. Is it justified? Name two other groups of organisms included in the same kingdom.

OR

- c) Name any four nutrients that the chemoautotrophic bacteria help in recycling,
- The amount of filtrate formed by the kidneys per minute, is called glomerular filtration rate (GFR). In a 030. healthy human, the GFR is approximately 125 mL/minute. Study the flow chart given and answer the questions to fill in the blanks.



(D) activates the adrenal cortex to release (E)

L

(E) raises the reabsorption of Na+ and water and raises the (P)

- a) Name the cells (A) which release rennin
- b) Mention what (B) represents.
- c) Identify (C), (D), (E) and (F) in the flow chart

OR

c) When is ANF released? Mention its source and how it does function as a check to the above mentioned mechanism.

Section - E

031.

a) Cametophyte is a dominant phase in the life cycle of a broyophyte. Explain.

b) Explain the following terms

(i) protonema (ii) sporophyll (iii) archegonium

OR

Petromyzon, Scoliodon and Labeo are all fishes; but they are placed in three different classes of Chordata.

- a) How does Petromyzon differ from the other two?
- b) Name the classes which each of them belongs to.

Who propriets the third mostic model of plasma membrane? Why is it called so? Describe the fluid invited the del of plasma membrane with the help of a fabriled diagram.

What days 'S stand for and what does it measure?

(i) Chresher in prokanners are of 715 fore.

() What are siden to be

of chromosomes?

b) What forms the basis for such a classification

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BUDHA DAL PUBLIC SCHOOL, PATIALA Final Examination (4 March 2025)

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

M.M. 70

Time: 3hrs. General Instructions:

- All questions are compulsory. (i)
- The question paper has five sections and 33 questions. All questions are compulsory (ii)
- 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 (iii) 3 questions of 5 marks each.
- There is no overall choice. However, internal choices have been provided in some questions. A student (iv) has to attempt only one of the alternatives in such questions
- Wherever necessary, neat and properly labelled diagrams should be drawn. (v)

Section - A

- Morels and truffles are the edible fungi belonging to the class Q1.
 - d) Deuteromycetes c) Basidiomycetes b) Ascomycetes a) Phycomycetes

Match the Column Q2.

Column – I	Column – II			
A) Red algae	(1) Sargassum			
C) Green algae	(3) Polysiphonia			
c) orcentingue	(4) Gracilaria			
	(5) Dictyota			
	(6) Volvox	1 to an a transfe		

a) A (3,4), B (1,5), C (2,6) b) A (3,5), B (1,4), C (2,6) c) A (2,6), B (1,4), C (3,5) d) A (2,4), B (1,5), C (3,6)

Ovary in Solanaceae Q3.

Q9.

- b) superior and bilocular a) is bicarpellary, synacarpous
- d) all of these c) has swollen axile placenta with many ovules
- All the tissues inner to the endodermis together constitute Q4. a) stele b) conjuctive tissue c) pith d) vascular tissues
- Galactans and mannas are the components of the cell wall of Q5. b) algae c) fungi d) cyanobacteria a) bacteria
- The protein that functions as a hormone is A and as an enzyme is B. Q6.
 - a) A Trypsin, B Insulin
 - b) A Insulin, B Trypsin
 - c) A GLUT-4, B Insulin
 - d) A Globulin, B Trypsin

Who provided evidence for the production of glucose, when green plants grow? Q7.

> a) Julius von Sachs b) Ingenhousz c) Joseph Priestley d) Blackmann

- Q8. The value of RQ for anaerobic respiration will be b) less than one a) one c) infinity d) more than one
 - Water as a by-product of cellular respiration is formed as a result of
 - a) conversion of glucose to pyruvic acid
 - b) conversion of pyruvic acid to acetyl CoA
 - c) reduction of oxygen, the terminal acceptor of electrons
 - d) conversion of malic acid to oxaloacetic acid

- Q10. Addison's disease is caused by
 - a) hypersecretion of adrenal medulla
 - b) hyposecretion of adrenal cortex
 - c) hypersecretion of adrenal medulla
 - d) hyposecretion of adrenal cortex
- Q11. Which of the following statements in incorrect regarding respiratory system?
 - a) each terminal bronchiole give rise to a network of bronchi.
 - b) The alveoli are highly vascularised.
 - c) The lungs are covered by a double-layered membrane.
 - d) The pleural fluid reduces friction on the lung surface.
- Q12. Match the abnormal conditions given in Column I with their explanations given n Column II and select the correct option:

Column – I	Column – II
A) Glycosurea	(i) Accumulation of uric acid in joints
B) Renal calculi	(ii) Inflammation in glomeruli
C) Glomerular nephritis	(iii) Mass of crystallized salts within the kidney
D) Gout	(iv) Presence of glucose in urine

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

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- c) Assertion (A) is true but Reason (R) is false.
- d) Assertion (A) is false but Reason (R) is true.
- Q13. Assertion : The closed blood vascular system of the vertebrates and some invertebrates is more advantageous to the animal.

Reason : In the closed circulatory system, the blood flow can be more precisely regulated as per the demand of the body.

Q14. Assertion : Fermentation of a glucose molecule produces only two molecules of ATP. Reason : The reduced coenzyme, NADH formed in glycolysis is used for the conversion of pyruvic acid into ethanol.

- Q15. Assertion : Tapworm, roundworm and pinworm are endoparasites of human intestine. Reason : Improperly cooked food is the source of all types of intestinal infections.
- Q16. Assertion : Meiotic division results in the production of four haploid cells.

Reason : Reduction in the number of chromosomes occurs during anaphase I.

Section - B

- Q17. Distinguish between the following:
 - a) Protoxylem and metaxylem b) Open and closed vascular bundles
- Q18. Mitosis results in the production or two cells, which are similar to each other. What would be the consequence of each of the following irregularities that occurs during mitosis?
 - a) Centromere is not divided.
 - b) Cytokinesis does not occur.
- Q19. What is the effect of substrate concentration on the action of an enzyme? Explain with reason.

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- Why is a probin gradient managary in photophosphorylation? 111
- come the type of fathl between the following:
 - a) hannan phalamaa

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- h) homing monahulum
- () Induced evenual lange
- d) terms in the annal difficulty and the shulle

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- 1399. Dow-the the process of sestial reproduction in Basidioniverles.
- 124 How can you differentiate between free central and eastle placentation? Raplain, Citye one example of each and also draw diagrams
- 1.124 i) Name the following in a from
 - The structure that adheres the testis on to a kidney.
 - b) The small moduli chamber that is used to pass faecal matter, spernis/ova and urine to the exterior
 - 6) -The sense organs in a frog for (i) smell and (ii) touch

(0) Mention two functions performed by ears as sense organs in frogs.

- Draw well labelled diagram of T.B. of Flagella 024
- U20. Explain non-cyclic photophosphorylation in plants along with flow chart. Why is this process called so?

02% Why is kreb cycle also called citric acid cycle? Citve a schematic representation of Kreb's cycle.

C)94. Draw a standard ECCI and explain the different segments in it.

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what is resting membrane potential? Give the role of sochum potassium pumps in maintaining it. How does the resting potential change into action potential?

Hotton = D

Two stages in the breathing process are shown below. Observe the diagram and answer the questions that 029 follow



The movement of air into and out of the lungs is causied out by criedlin a pressure gradient between the lungs and the atmosphere The diaphragm and the interiortal muscles help in generation of such a pressure gradient.

B-3

- Identify the two stages (A and B) of breathing. d)
- Compare the intra-pulmonary air pressure in the stages A and B. b)
- Mention the condition and the position of diaphragm in A and B, respectively, 6)

OR

c) (i) Name the muscles involved in the generation of pressure gradient between the lungs and almosphere.

(ii) How many times does a normal healthy human being breathe?

Q30. The diagram of a Nostoc filament is shown below. Observe the diagram and answer the questions that follow:



- a) Identify the cell labelled 'A'. What is its significance?
- b) Name the pigment that gives the organism the characteristic blue-green colour.
- c) Mention its place/kingdom in the classification system proposed by R.H. Whittaker. Is it justified? Name two other groups of organisms included in the same kingdom.

OR

c) Name any four nutrients that the chemoautotrophic bacteria help in recycling.

Section - E

- a) What are coralloid roots? Where these are found?
- The heterosporous pteridophytes show certain characteristics, which are precursor to the seed h) habit in gymnosperms. Explain.

OR

- a) Could the number of eggs or young ones produced by an oviparious and viviparous mother be equal? Why?
- b) Petromyzon, Scoliodon and Labeo are all fishes; but they are placed in three different classes of
 - (i) How does Petromyzon differ from the other two?
 - (ii) Name the classes which each of them belongs to.
- Q32.

Q31.

- a) How regulation of kidney function takes place in humans?
- b) Draw well labelled diagram of Sarcomere.

OR

Explain the sliding filament theory of the mechanism of muscle contraction along with diagram.

Name the scientists who proposed the fluid mosaic model about the structure of plasma membrane. Q33. Describe the structure of plasma membrane according to this model along with well labelled diagram.

OR

What is a centromere? How does the position of centromere form the basis of classification of chromosomes? Support your answer with diagrams showing the position of centromere on different types of chromosomes.