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CLASS XI : BIOLOGY

CUMULATIVE EXAMINATION 2023-24

Maximum Marks: 70 Time: 3 Hours

General Instructions:

(i) All questions are compulsory.

(ii) The question paper has five sections and 33 questions.

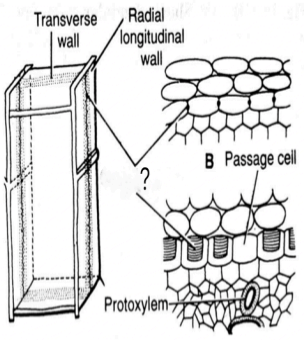
(iii) Section A has 16 questions of 1 mark each; Section B has 5 questions of 2 marks each; Section C has 7 questions of 3 marks each; Section D has 2 case-based questions of 4 marks each; and Section E has 3 questions of 5 marks each.

(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 each question.

(v) Wherever necessary, neat and properly labeled diagram should be drawn.

	SECTION A	
1.	This phylum is consisting two important forms polyp and medusa a. Platyhelminthes b. Porifera c. Aschelminthes d. Cnidaria	1
2.	In a polysaccharide the individual monosaccharides are linked by a a. Phosphodiester bond b. Glycosidic bond c. Peptide bond d. Hydrogen bond	1
3.	The improved model of cell membrane (fluid mosaic model) was proposed by- a. Singer and Nicholson b. Rudolf Virchow c. Schleiden and Schwann d. Watson and Crick	1
4.	Pairs of homologous chromosomes become arranged at the equatorial plane of the cell during a. Metaphase b. Metaphase – I c. Metaphase – II d. Zygotene	1
5.	Ferns are included in a. Psilopsida b. Lycopsida c. Sphenopsida d. Pteropsida	1
6.	The correct name of Mango according to binomial nomenclature	1

	a. Mangifera indica b. *Mangifera Indica* c. *Mangifera indica* d. *mangifera indica*	
7.	*Contagium vivum fluidum* was proposed by a. D L Iwanowsky b. M W Beijerinck c. W M Stanley d. T O Diener	1
8.	Holdfast, stipe and frond constitutes the plant body in case of a. Rhodophyceae b. Chlorophyceae c. Phaeophyceae d. All of the above	1
9.	Summer sleep in frog is known as a. Hibernation b. Aestivation c. Metagenesis d. Metamorphosis	1

10.	The tangential as well as radial walls of the endodermal cells have a deposition of water-impermeable, waxy material, called a. Thickening b. Suberin c. Tough Cells d. None of these  	1
11.	ICBN means a. International Code for Binomial Nomenclature b. International Code for Biological Nomenclature c. International Code for Botanical Nomenclature d. Indian Code for Biological Nomenclature	1
12.	With reference to enzymes, which one of the following statements is true? a. Apoenzyme = Holoenzyme + Coenzyme b. Holoenzyme = Apoenzyme + Coenzyme c. Coenzyme = Apoenzyme + Holoenzyme d. Holoenzyme = Coenzyme – Apoenzyme	1

Question No. 13 to 16 consist of two statements- Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

A. Both A and R are true and R is the correct explanation of A.
B. Both A and R are true and R is not the correct explanation of A.
C. A is true but R is false.
D. A is false but R is true.

13.	**Assertion (A):** Epigynous ovary is always inferior. **Reason (R):** All the floral parts lie above the level of ovary in epigynous condition and therefore, ovary becomes inferior.	1
14.	**Assertion (A):** In plant cells, wall formation starts in the centre of the cell and grows outward to meet the existing lateral walls. **Reason (R):** The formation of the new cell wall begins with the formation of a simple precursor, called cell plate that represents the middle lamellae between the walls of two adjacent cells.	1
15.	**Assertion (A):** There is hepatic portal system in frogs. **Reason (R):** It is venous connection between liver and intestine in frog.	1
16.	**Assertion (A):** In collateral vascular bundles, phloem is situated towards inner side. **Reason (R):** In monocot stem, cambium is absent.	1

SECTION B

17. Complete the table given below- ½x4= 2

PHYLUM / CLASS	MAIN FEATURE	EXAMPLE
Porifera	Pores are present on body	a
b	Malpighian tubules	Scorpion
c	Bioluminescence	*Pleurobrachia*
Cyclostomata	d	*Petromyzon*

18. Deuteromycetes is considered 'Imperfect fungi'. Explain with one example 1+1= 2

19. Complete the table given below- ½x4= 2

CLASS	Cell wall	Stored food
Chlorophyceae	a	b
c	d	Floridean starch

20. a. Name the cells that make the leaves curl in plants during water stress.

b. What type of vascular bundles are found in dicot root? 1+1= 2

21. Describe vexillary aestivation with the help of a diagram. 2

SECTION C

22. Draw a neat and labelled diagram of mitochondria and discuss its contribution in cell. 1½ +

OR

Describe the structure of nucleus with the help of a neat and labeled diagram. 1½

23. a. What is crossing over? Name the enzyme involved. 1½ +

b. Mention the significance of meiosis. (Any 3)

		1½
24.	How the Archaebacteria are different from Eubacteria? Mention three groups of Archaebacteria.	1½ +1½
25.	Name the accessory pigments. Mention their significance in photosynthesis	3
26.	Draw a well labeled diagram of digestive system of frog.	3
27.	Differentiate dicot and monocot stem on the basis of following: a. Arrangement of vascular bundles b. Nature of hypodermis. c. Type of vascular bundles	1+1+ 1=3
28.	a. Name the plants with coralloid roots and mycorrhiza with their functions. b. What is heterospory? Give one example.	2 +1=3
SECTION D		
Q. Nos. 29 and 30 are case based questions. Each question has subparts with internal choice in one subpart.		
29.	Enzymes are catalysts that, within the mild conditions of temperature, pH, and pressure of the cells, carry out chemical reactions at amazing high rate. They are characterized by a remarkable efficiency and specificity. Substrates are the substances on which enzymes act. Enzymes are named by adding the suffix - ase to the name of the substrate that they modify (i.e., urease and tyrosinase), or the type of reaction they catalyze (dehydrogenase, decarboxylase). Some have arbitrary names (pepsin and trypsin). The International Union of Biochemistry and Molecular Biology assigns each enzyme a name and a number to identify them. Enzymes are classified into six categories according to the type of reaction catalyzed: Oxidoreductases, transferases, hydrolases, lyases, ligases, and isomerases.	1+1 +1+ 1 = 4

Structurally, the vast majority of enzymes are proteins. Also RNA molecules have catalytic activity .

Coenzymes are small non-protein molecules that are associated to some enzymes. Many coenzymes are related to vitamins. Coenzymes and the protein portion with catalytic activity or apoenzyme form the holoenzyme. The apoenzyme is responsible for the enzyme's substrate specificity. Coenzymes undergo changes to compensate for the transformations occurring in the substrate

i. What are RNA molecules that have catalytic activity known as?

a. ribosome b. Ribozyme

c. RNA polymerase d. None of the

ii. How do enzymes help us?

a. They speed up rate of biochemical reaction

b. They reduce the activation energy required for a biochemical reaction.

c. They remain unused after the reaction

d. All the above.

iii. The rate of the enzymatic reaction is directly proportional to the amount of enzyme present in the sample. If we go on increasing the substrate concentration the enzyme activity will increase till

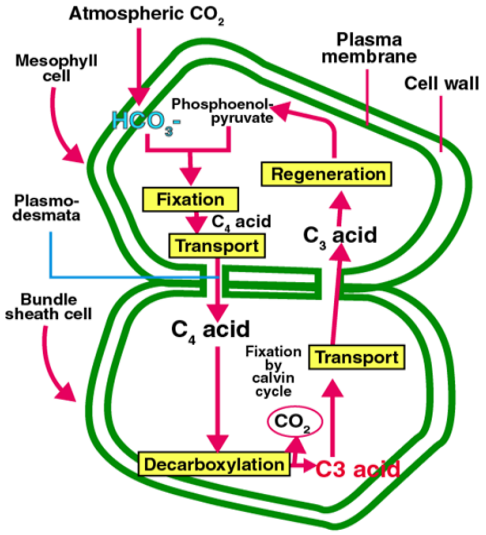
a. All substrate molecules are saturated b. Till all enzyme molecules are saturated

c. Till all the conditions are favourable d. None of the above.

iv. Coenzymes are small non-protein molecules that are associated with some enzymes. Many coenzymes are related to vitamins. Coenzymes and the protein portion with catalytic activity or apoenzyme form_____

a. Apo enzyme b. Cofactor

c. Coenzyme d. Holoenzyme

	OR The minimum amount of energy required to initiate a chemical reaction is called a. Enzymatic energy b. Initation energy c. Substrate energy d. Activation energy	
30.	The CO_2 released in the bundle sheath cell enters the C_3 pathway, a pathway common to all plants. The bundle sheath cells are rich in an enzyme RuBisCO but lacks PEPcase.  i. Number of ATP molecules required for synthesis of 1 molecule of glucose in C_4 pathway: a. 12 b. 18 c. 24 d. 30 ii. Expand RuBisCO OR Expand PEP case iii. The first product of C_4 pathway is a. Oxaloacetate b. Oxalosuccinate c. Phosphoglycerate d. Malate iv. What is Kranz anatomy?	1+1 +1+ 1 = 4
SECTION E		
31.	Draw the structure of a Chromosome with labellings. Mention the all types of chromosomes based on the position of centromere.	2+3 =5

	OR i. Mention three types of leucoplasts with their functions. ii. Give two types of ribosomes with their subunits. Which type occurs in chloroplast?	3+ 1+1 =5
32.	i. Draw and explain marginal, parietal and basal placentation. ii. Write differences between racemose and cymose inflorescence (Any 2) OR Describe three types of flowers based on the position of calyx, corolla, androecium in respect of ovary on thalamus with one example of each.	3+2 =5 5
33.	i. Write 03 differences between Chonrichythes and Osteichthyes. ii. Mention flight adaptation in birds. OR i. Mention salient features of Class Mammalia. ii. Name the excretory organs in Tapeworm and Earthworm.	3+2 =5