

PM SHRI KENDRIYA VIDYALAYA KELTRON NAGAR
HALF YEARLY EXAMINATION – 2025-26

Class: XI

Subject: Biology

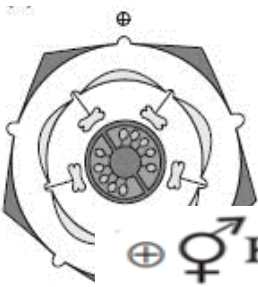
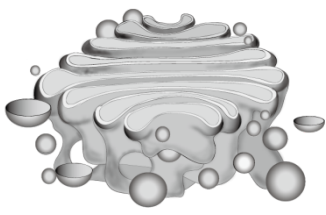
Max.Marks: 70

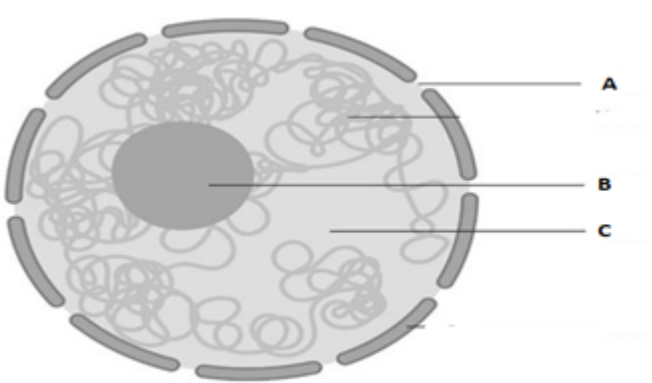
Time: 3 hours

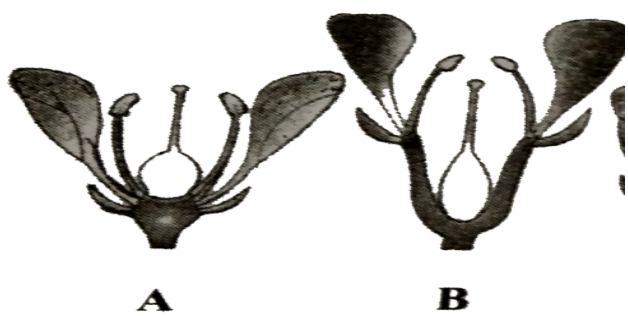
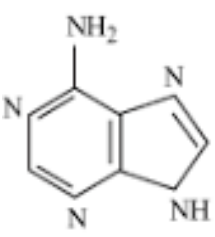
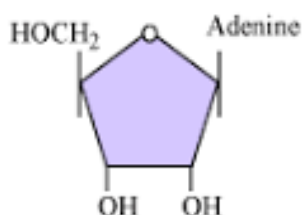
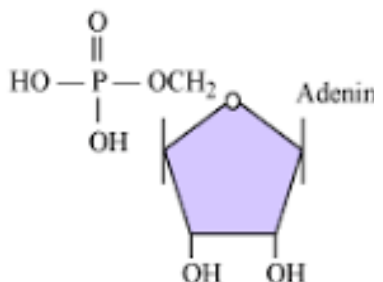
General Instructions:

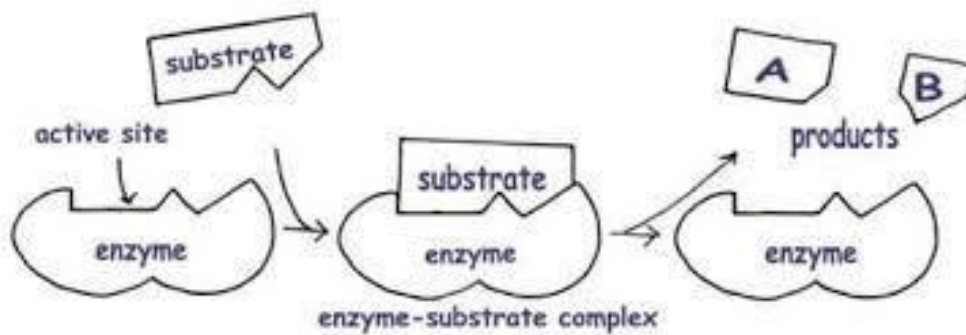
- (i) All questions are compulsory.
- (ii) The question paper has five sections and 33 questions. All questions are compulsory.
- (iii) Section–A has 16 questions of 1 mark each; Section–B has 5 questions of 2 marks each; Section–C has 7 questions of 3 marks each; Section– D has 2 case-based questions 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		
1	Read the following statements and select the option with the incorrect statements. (i) Order is the assemblage of classes, which exhibit a few similar characters. (ii) Binomial nomenclature was introduced by Carolus Linnaeus (iii) Cats and dogs are included in the family Felidae. (iv) Lower the taxon, more will be the similar characters shared by its members. a) i and ii b) i and iii c) ii and iii d) ii and iv	1
2	Which of the following statements about liverworts is true? a) They are vascular plants. b) They have a complex root system. c) They typically grow in moist environments. d) They produce flowers.	1
3	Raju has observed an animal with calcareous shell, feather like gills and radula. The animal belongs to a) Mollusca b) Annelida c) Echinodermata d) Arthropoda	1
4	In a freshwater ecosystem, researchers observed the presence of a group of microorganisms that were photosynthetic, could fix atmospheric nitrogen, and were able to survive in both aquatic and terrestrial environments. The researchers identified the organisms as cyanobacteria . Based on the characteristics of the microorganisms mentioned in the above case, which of the following is true? a) They are strictly aerobic and cannot survive in anaerobic conditions. b) They contain chlorophyll for photosynthesis, similar to plants. c) They lack a distinct nucleus and are multicellular. d) They require oxygen for nitrogen fixation.	1

5	Study carefully the given floral diagram and select the option which correctly represents the related floral formula  a) $\text{Br} \oplus \text{P}_{(3+3)} \text{A}_{3+3} \underline{\text{G}}_{(3)}$ b) $\% \text{K}(5) \text{C}1+2+(2) \text{A}(9)+1 \text{G}1$ c) $\oplus \text{K}_{(5)} \text{C}_{(5)} \text{A}_5 \underline{\text{G}}_{(2)}$ d) $\% \text{K}_5 \text{C}_5 \text{A}_{5+5} \text{G}_1$	1
6	Anatomy of a plant material showed exarch xylem and polyarch condition. From the given options identify the type of plant material. a) Dicot stem b) Dicot root c) Monocot stem d) Monocot root	1
7	If the DNA content of a cell is 2C and the chromosome number is 24 at G1 phase, what will be its DNA content and chromosome number respectively at G2 phase? a) 2C, 24 b) 4C, 48 c) 4C, 24 d) 2C, 48	1
8	Which of the following statements about the cell organelle shown in the diagram is not true?  a) These were first observed as densely stained structures near nucleus. b) They have a distinct convex cis face and a convex trans face which are connected. c) It performs the function of packaging of materials. d) The materials are released from the cis face.	1
9	Which characteristic feature differentiates thallophytes from higher plants? a) Presence of vascular tissues b) Presence of roots, stems, and leaves c) Undifferentiated body structure d) Ability to photosynthesise	1
10	Which of the following is NOT one of the six main classes of enzymes according to the Enzyme Commission? a) Oxidoreductases b) Transferases c) Hydrolases d) Coagulases	1
11	The cytoskeleton of a cell plays a key role in its structure and function. Which of the following is a creative way that the cytoskeleton aids in cellular processes? a) It helps the cell maintain its shape and provides tracks for intracellular transport. b) It generates energy through ATP synthesis.	1

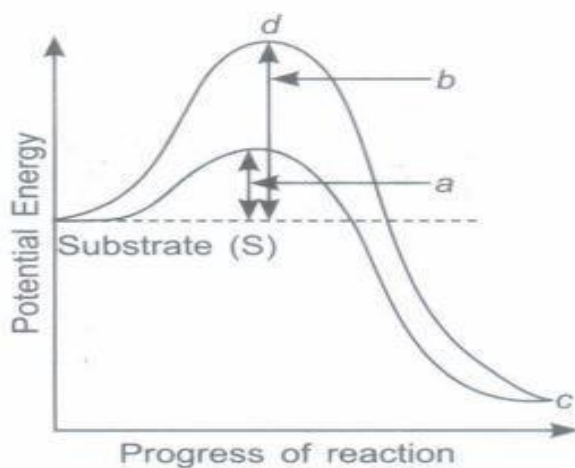
	c) It stores genetic material for cell division. d) It produces ribosomes for protein synthesis.	
12	Which of the following secondary metabolites is wrongly matched? a) Pigments – Carotenoids, anthocyanin b) Polymeric substances – Rubber, gums c) Toxin – Abrin, ricin d) Alkaloids – Lemon grass oil	1
	Question No. 13 to 16 consist of two statements – Assertion (A) and Reason (R). Answer these questions 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: Gymnosperms do not produce fruit. Reason: Ovules of gymnosperms are enclosed within the ovaries.	1
14	Assertion: Crossing over results in recombination of genetic materials. Reason: Crossing over is the exchange of segments of non-sister chromatids of homologous chromosomes.	1
15	Assertion : Platyhelminthes are acoelomate animals that exhibit bilateral symmetry. Reason : All members of Platyhelminthes possess a well-developed circulatory system.	1
16	Assertion: The smooth endoplasmic reticulum is involved in lipid synthesis and metabolism. Reason: The SER contains ribosomes on its surface, which allows it to synthesize lipids.	1
SECTION-B		
17.	What are the universal rules of binomial nomenclature?	2
18	What is heterospory? Briefly comment on its significance. Give an example	2
19	(a) Label the parts A, B and C in the given diagram (b)Mention the function of B 	2
20	Enlist the different types of amino acids based on the number of carboxyl and amino group in them. Also give one example of each of these amino acids.	2
21	Observe the given figure ; identify A and B citing example.	2

	 A B	
SECTION-C		
22	Enumerate the steps in the sexual cycle of a fungus. What do you understand by dikaryophase? Name the groups of fungi that show this stage in their life cycle.	3
23	Distinguish between - Racemose and cymose inflorescence - Apocarpous and syncarpous ovary - Fibrous roots and adventitious roots	3
24.	a) Some large empty, colourless cells are seen on the adaxial surface of grasses. Name the cells and mention the function they perform. b) By observing the mesophyll tissue, how can we distinguish between dicot and monocot leaf? c) How are stomata distributed in a dicot and monocot leaf?	3
25	Draw a neat and labelled diagram of male reproductive system of frog. OR Draw a neat labelled diagram of female reproductive system of frog.	3
26	How are the following different from each other?   	3
27	A student visited a fish market where he observed different types of fishes. He then observed that they had striking differences and noticed one group was from freshwater while the other from sea. Based on this information can you bring out the differences between the two types of fishes and name the category to which they belong.	3
28	Analyze the events during every stage of the cell cycle and notice how the following two parameters change - Number of chromosomes per cell - Amount of DNA per cell	3
SECTION -D		
29	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.	4



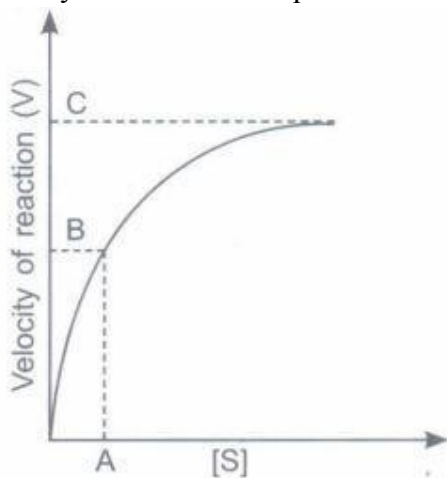
- What is active site of an enzyme?
- Activation energy plays a vital role in converting a substrate into product. Define activation energy?

OR



What does 'a' and 'd' represent in the above graph.

- Study the following graph showing the effect of substrate concentration on the rate of enzyme activity and answer the questions that follow:

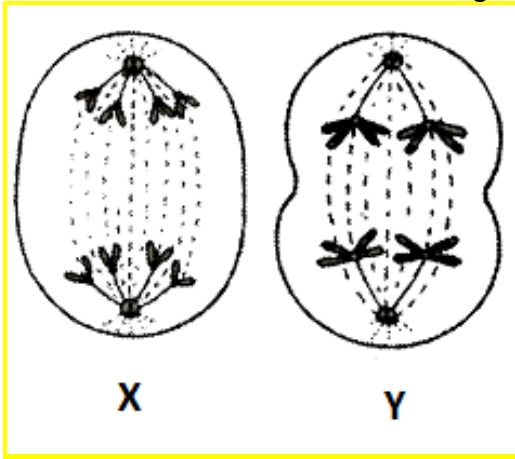


What does C represent in the graph? Why is there no further increase in the velocity of enzyme action with addition of substrate?

30	Read the following and answer the questions given below: Aadhya, a student of class IX has brought a crab and an apple snail from the beach. She had identified both as members of Phylum Mollusca, as they have a shell. As a senior student of biology, help her to identify the animals correctly. (a) Name the phylum, crab belongs to and that which apple snail belongs to. (b) Write any four differences between the animals of the two phyla. (c) Name any two economically important arthropods. (d) Write any two respiratory organs of arthropods.	4
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SECTION -E

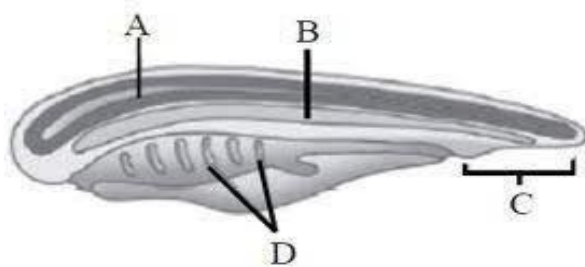
31	What is aestivation? What are its different types and give examples? OR Describe the transverse section of dicot leaf with the help of diagram.	5
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32	a) Identify the stage in cell division shown in X and Y. b) Explain the behaviour of chromosomes during these phases.  X Y c) Comment on the statement “Telophase is reverse of Prophase” d) Write the phases of the cell cycle / cell division against each of the events i. Terminalisation of chiasmata - ii Formation of dyad cells iii. Division of centromere ii. Replication of DNA OR Answer the following questions a) Why proteins are called hetero polymers? b) What are the two types of amino acids with reference to dietary proteins? c) Which type of amino acids are not synthesised in our body, but supplied through the food? d) Name the most abundant protein in animal world and in the whole of biosphere. e) Name the protein the enables glucose transport into cells	5
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33	a) What type of symmetry is seen in the following animals	5
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b) Identify the given diagram. Label A & D.



c) Given below are the pair's excretory organs and the animal to which they belong. Which out of these is not a matching pair and why?

Balanoglossus -Green glands

Leech - Nephridia

Locust -Malpighian tubes

Liver Fluke-flame cells

d) Meena's younger sister went to the zoo and pointed out that bats are like birds as they are able to fly. How does she explain to her sister that bats are mammals and not birds?

OR

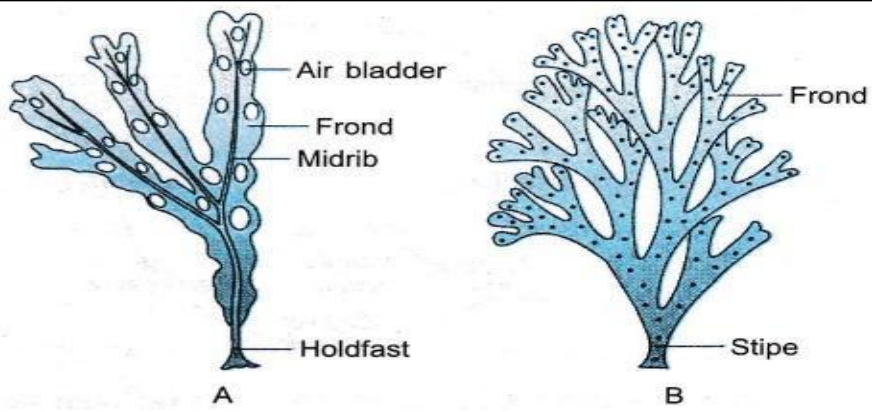
Two members of a class of algae are shown below.

(a) Identify the two algae A and B and name the class, which they both belong to.

(b) Name the pigment which gives them the characteristic colour.

(c) Mention the characteristics of their gametes with reference to

(i) shape and (ii) flagellation



iii. Illustrate the economic importance of algae.