

KENDRIYA VIDYALAYA SANGATHAN LUCKNOW REGION
CLASS XII BIOLOGY
PREBOARD- I - 2024-25

Maximum Marks: 70

Time: 3 hours

General Instructions:

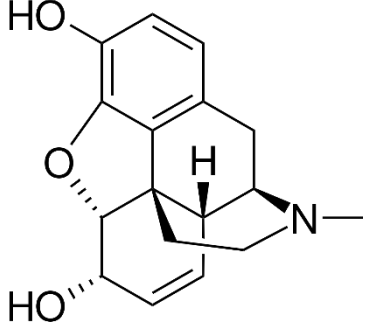
1. All questions are compulsory.
2. The question paper has five sections and 33 questions.
3. Section–A has 16 questions of 1 mark each; Section–B has 5 questions of 2 marks each; Section– C has 7 questions of 3 marks each; Section– D has 2 case-based questions of 4 marks each; and Section–E has 3 questions of 5 marks each.
4. 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.
5. Wherever necessary, neat and properly labelled diagrams should be drawn.

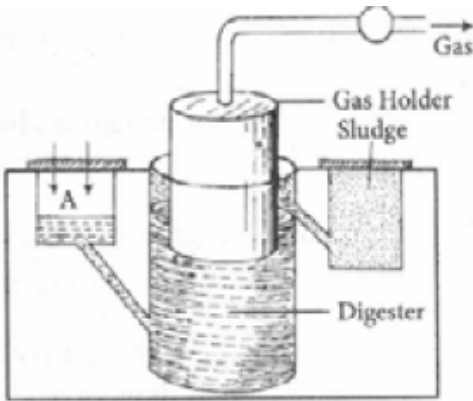
Section A

Q. No. 1 to 12 are multiple choice questions. Only one of the choices is correct. Select and write the correct choice as well as the answer to these questions.

Q N	Question	M
1.	Which one of the statements regarding a pair of testes in human male is correct? (a) They are present in the abdominal cavity (b) They are formed after puberty (c) They are both reproductive and endocrine in function (d) They are reproductive but not endocrine in function	1
2.	The plant parts which consist of two generations one within the other: (1) Pollen grains inside the anther (2) Germinated pollen grain with two male gametes (3) Seed inside the fruit (4) Embryo sac inside the ovule (a) (1) and (4) (b) (1) only (c) (a1), (2) and (3) (d) (3) and (4)	1
3.	All the terminator codons begin with the nucleotide of (a) Adenine (b) Cytosine (c) Guanine (d) Uracil	1
4.	What is the function of the promoter in a transcription unit? A. Provides a binding site for RNA polymerase B. Codes for the amino acid sequence of a protein C. Signals the end of transcription D. Removes introns from pre-mRNA	1

19.	Attempt either A or B: A. The length of a DNA molecule is significantly longer than the diameter of a typical nucleus. How does DNA packaging solve this problem? B. The Genetic code is described as being "degenerate." Explain what this means. Give two potential evolutionary advantages of a degenerate genetic code.	2
20.	How have transgenic animals proved to be beneficial in: (a) Production of biological products (b) Chemical safety testing	2
21.	Study the pedigree chart given below and answer the questions that follow: a. What is the most likely type of trait being studied in the given chart? b. State the genotypes of the individuals 6-8 using the letter A to represent the trait (Uppercase A: dominant, Lowercase a: recessive).	$\frac{1}{2}$ +1 $\frac{1}{2}$
SECTION C		
22.	Examine the diagram representing a embryo sac of a typical angiosperm. a. Identify the labelled structures A, B, C, and D. b. Explain the role of each structure in double fertilization.	mature and D. the process of 3

23.	Thalassemia is an autosomal recessive disorder that causes anaemic conditions in an individual. A blood smear from a heterozygous individual shows blood cells that are small, pale and irregularly shaped along with normal RBCs. (a) State the genotypic and phenotypic ratios of offspring born to a carrier mother and a thalassemic father. (b) Does the allele for thalassemia exhibit codominance? Justify	3
24.	label a unit RNA above has been transcribed. Write the complete name of the enzyme that transcribed this RNA A T G C A T G C A T G C  “RNA molecule” Construct and transcription from which the segment given	2+ 1
25.	a. Identify the compound A by the chemical structure shown here. b. Name the plant from which it is obtained. c. An acetylated form of this compound A is used as a depressant. Name the compound B formed by acetylation of compound A. d. Explain mechanism of action of compound B on human physiology. 	½ + ½ +1 +1
26.	Name the ancestors of man based on the features given below: (i) Human like, meat-eater with 900 cc brain, lived in Java. (ii) More human with brain size 1400 cc, lived in central Asia, used hides and buried their dead. (iii) Human like, vegetarian, with brain capacity between 650 cc and 800 cc.	1x 3
27.	Expand ZIFT and IUT. How are these two methods different from each other?	1+ 2
28.	Scientists have succeeded in recovering healthy sugarcane plants from a diseased one. (i) Name the part of the plant used as explant by scientists. (ii) Describe the procedure the scientists followed for recovery of the healthy parts. (iii) Which term is used for each of the plants derived by this method? (iv) The capacity to generate whole plants from a cell or explant is known as	1+ 1 +1/ 2 + ½
SECTION D		

29.	Study the given picture of biogas plant and answer the following questions:  (a) Name the components gaining entry from A into the chamber and the components that get collected in gas holder. (b) Mention the group of bacteria and the condition in which they act on the component that entered from A in the digester. (c) Name two institutions that regulate and implements various strategies regarding biogas plants in India. (d) Name living organisms which contain the above group of bacteria in their gut.	1x 4
30.	Ecological relationships between organisms play an important role in the biodiversity of the region. In some cases, they benefit the diversity while in others cause a subsequent reduction in it. (a) A significant reduction in the predator population causes species abundance in the prey species. Is this statement TRUE? Give a reason to support your answer. (b) Barnacles, sticky crustaceans and the blue whale are in a commensal relationship where barnacles use blue whales for transport. How would the extinction of either species cause a change in biodiversity? (c) In which type of ecological relationship can the extinction of one species lead to the extinction of the other species? (d) What is the term used to describe the phenomenon describe in (c) called?	1+ 1 + 1+ ½ +1/ 2
SECTION E		
31.	(a) Name two hormones that are constituents of contraceptive pills. (b) What is the advantage of 'Saheli' over other oral contraceptive pills? Justify whether it can be considered an ideal contraceptive. (c) Name and give a brief description of three types of IUDs. OR (a) Describe the events of oogenesis with the help of schematic representation. (b) Write two differences between oogenesis and spermatogenesis.	1+ 2+ 2 3+ 2
32.	a) Explain how to find whether an <i>E. coli</i> bacterium has transformed or not when a recombinant DNA bearing ampicillin resistant gene is transferred into it. What does the ampicillin resistant gene act as in the above case? b) Illustrate the method used by Eli Lilly to produce human Insulin. OR	3+ 2

