



BK BIRLA CENTRE FOR EDUCATION
SARALA BIRLA GROUP OF SCHOOLS
SENIOR SECONDARY | CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL



PRE-MID TERM EXAM 2024-25

BIOLOGY (044)

Class: XII
 Date: 03/08/2024

Duration: 1 Hr
 Max. Marks: 25

General Instructions:

- i. This question paper consists of 12 questions in 3 sections.
- ii. Section A consists of 3 objective type questions carrying 1 mark each.
- iii. Section B consists of 5 Very Short questions carrying 02 marks each.
- iv. Section C consists of 4 Short Answer type questions carrying 03 marks each.

Section A

1. A short piece of DNA, having 20 base pairs, was analyzed to find the number of nucleotide bases in each of the polynucleotide strands. Some of the results are shown in the table. 1

	Number of nucleotide bases			
	Adenine	Cytosine	Guanine	Thymine
Strand 1	4	4		
Strand 2		5		

- How many nucleotides containing Adenine were present in strand 2?
 a) 2 b) 4 c) 5 d) 7
2. In certain species of insects, some have 13 chromosomes, and others have 14 chromosomes. The 13 and 14 chromosome-bearing organisms are: 1
 a) males and females, respectively
 b) females and males, respectively
 c) all males
 d) all females
3. Assertion: The nucleic acids are polymers of nucleotides. 1
 Reason: Three types of nucleic acids are found in living systems.
 Select the correct Option.
 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.

Section B

4. A cross within a normal couple resulted in a son who was hemophilic and a normal daughter. When the daughter was married to a normal man, to their surprise, the grandson was also hemophilic. 2
 a) Represent this cross in the form of a pedigree chart.
 b) Write the conclusion you draw from the inheritance pattern of this disease.

5. A DNA segment has a total of 1000 nucleotides, out of which 240 of them are adenine containing nucleotides. How many pyrimidine bases this DNA segment possess? Also, state the law that governs the composition of DNA so far as the purine and pyrimidine bases are concerned. 2
6. Differentiate between: 2
a) Dominance and Recessive
b) Homozygous and heterozygous
7. Explain how the packaging of DNA helix takes place in a cell. 2
8. A tall Pea plant with yellow seeds (heterozygous for both) is crossed with a dwarf Pea plant with green seeds. Using a Punnett square work out the cross to show the phenotypes and the genotypes of the F1 generation. 2

Section C

9. A plant of *Antirrhinum* with red flowers was crossed with another plant of the same species with white flowers. The plants of F1 generation bore pink flowers. Explain the pattern of inheritance with the help of a cross. 3
10. Briefly explain chromosomal disorders. 3
11. What is Pleiotropy? Explain it with the help of an example. 3
12. Explain Griffith's experiment. 3