B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL

PRE-MID TERM TEST-I 2025-26
BIOLOGY (044)

Class: XII **Time: 1hour**
Date: 06.08.25 **Max Marks: 25**
Admission no: **Roll no:**

General Instructions:

i. This question paper consists of 13 questions in 3 sections.
ii. Section A consists of 5 objective-type questions carrying 1 mark each.
iii. Section B consists of 4 Very Short questions carrying 02 marks each.
iv. Section C consists of 4 Short Answer questions with 03 marks each.

Section A

1. If frequency of 'A' allele is 0.4 then, find out the frequency of 'B' allele and heterozygous genotype in a random mating population at equilibria. 1
   (a) 0.6 and 0.24
   (b) 0.6 and 0.46
   (c) 0.6 and 0.48
   (d) 0.6 and 0.96
2. The chronological order of human evolution from early to the recent is 1
   (a) Ramapithecus→Homo habilis→Australopithecus→Homo erectus
   (b) Ramapithecus→ Australopithecus→ Homo habilis→ Homo erectus
   (c) Australopithecus→ Homo habilis→ Ramapithecus→ Homo erectus
   (d) Australopithecus→ Ramapithecus→ Homo habilis→ Homo erectus
3. Under HGP, the scientists have located 1.4 million locations where difference in single DNA base exists. It is termed as 1
   (a) Microsatellites
   (b) Single nucleotide polymorphism
   (c) Polymorphonuclear regions
   (d) Sequential nucleotide polymorphism
4. 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 I	4	4		
Strand 2		5		

   How many nucleotides containing Adenine were present in strand 2?
   (a) 2 (b) 4 (c) 5 (d) 7
5. Assertion (A): Australian marsupials can be taken as example of adaptive radiation. 1
   Reason(R): A number of marsupials, evolved from an ancestral stock, but all within the Australian island continent.
   (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

6. How is the long polymer of DNA is packaged in a cell? 2

7. DNA replicates semi-conservatively. Give an experimental proof. 2
8. Write the salient features of the genetic code. 2
9. Explain homologous and analogous organs with the help of an example. 2

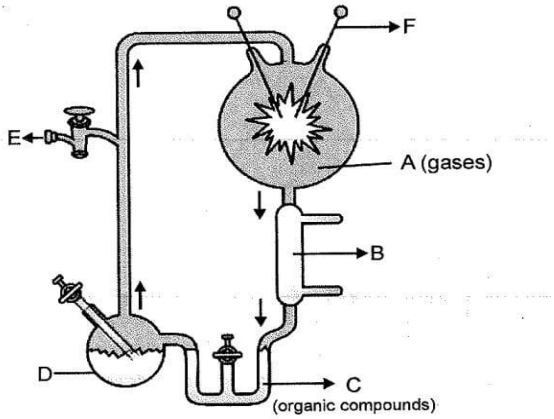
Section C

10. Study the schematic representation of the genes involved in the lac operon given below and answer the questions that follows: 3

p	i	p	o	z	y	a

(a) Identify and name the regulatory gene in this operon. Explain its role in 'switching off' the operon.
(b) Why is the lac operon's regulation reffered to as negative regulation?
(c) Name the inducer molecule.

11. Explain the process of transcription in bacteria. 3
12. 3



(a) Name the above experiment and label A,B,E and F.
(b) Explain the chemical evolution on the basis of above experiment.

13. (a) Archaeopteryx is a connecting link between reptiles and birds. Explain. 3
(b) Before industrialisation, white-winged moths were more in number as compared to melanised moths. Give reason.
(c) What are the factors affecting the Hardy-Weinberg equilibrium?

**********ALL THE BEST**********