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 MARKING SCHEME (044)

Class: XII **Time: 1hour**

Date: 06.08.25 **Max Marks: 25**

Section A

1. (c) 0.6 and 0.48 — 1
2. (b) Ramapithecus→ Australopithecus→ Homo habilis→ Homo erectus — 1
3. (b) Single nucleotide polymorphism — 1
4. (d) 7 — 1
5. (a) Both A and R are true and R is the correct explanation of A. — 1

Section B

6. The negatively charged DNA is wrapped around the positively charged histone octamer to form a structure called nucleosome. — 2
7. — 2

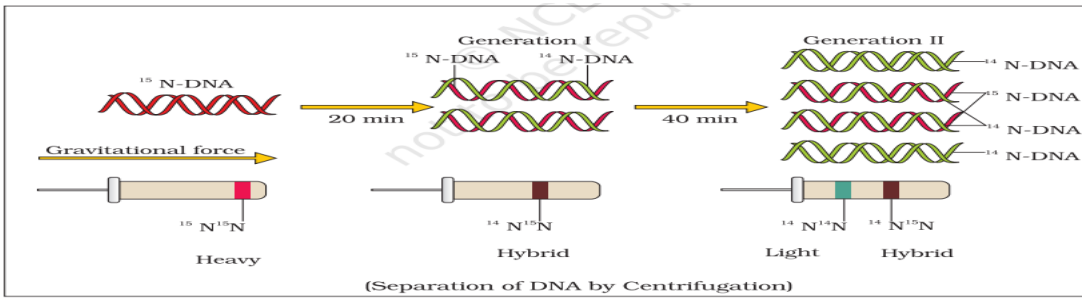
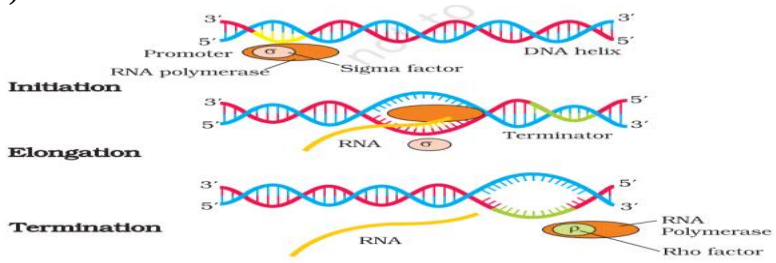


Figure 6.7 Meselson and Stahl's Experiment

8. (i) The codon is triplet. 61 codons code for amino acids and 3 codons do not code for any amino acids, hence they function as stop codons. — 2
   (ii) Some amino acids are coded by more than one codon, hence the code is degenerate.
9. Homologous organs are similar in structure and origin but may have different functions, while analogous organs are similar in function but different in structure and origin. One example each. — 2

Section C

10. (a) The lac operon consists of one regulatory gene-the i gene. The i-gene codes for the repressor of the lac operon. — 1
    (b) The lac operon's regulation is called negative regulation because it is typically turned off by a repressor protein that binds to the operator region of the operon — 1
    (c) Lactose — 1
11. — 1



12. (a)A- CH_4, CO_2, H_2O and NH_3 — 2
    (b)Condenser
    (e) To vaccum pump
    (f) Electrodes

(b) The Miller-Urey experiment provides evidence for chemical evolution by demonstrating that simple inorganic compounds can spontaneously form complex organic molecules under conditions similar to those of early Earth. 1

13. (a) Archaeopteryx is considered a connecting link between reptiles and birds because it exhibits characteristics of both groups. It had reptilian features like teeth, a long bony tail, and three-fingered claws on its wings, while also possessing bird-like features such as feathers and wings modified from forelimbs. 1

(b) Before industrialization, white-winged moths were more abundant because they had a survival advantage due to better camouflage against the light-colored lichen-covered tree trunks. Darker moths were more easily spotted and preyed upon by birds. 1

(c) mutation, gene flow (migration), genetic drift, non-random mating, and natural selection. 1