

COURSE : CORE

PAPER : MOLECULAR BIOLOGY

TIME : 3 HOURS

MAX. MARKS: 100

SECTION – A

ANSWER ALL QUESTIONS

(5 X 1=5)

I CHOOSE THE CORRECT ANSWER:

1. A complete cell cycle usually consists of
a. 4 stages b. 5 stages c. 3 stages d. 6 stages
2. Wobble hypothesis proposed by
a. Francis Crick b. Wobble c. Watson & Crick d. Beadle & Tatum
3. The DNA strand that is used as a template of RNA synthesis is called
a. coding strand b. non-coding strand c. Lagging strand d. Leading strand
4. A typical chloroplast genome is approximately_____ base pairs in length.
a. 10,000 – 20,000 b. 100,000 to 200,000 c. 1000,000 – 2000,000
d. 10000000 – 20000000.
5. The predominant form of DNA found in living cells is
a. A – DNA b. B – DNA c. C – DNA d. Z - DNA

II FILL IN THE BLANKS

(4 x 1 = 4)

6. DNA replication is initiated by the binding of _____.
7. The resting phase of cell division is called _____.
8. The DNA segments that transpose themselves are known as _____.
9. An enzyme known as _____ travels ahead of the helicase enzyme and alleviates the positive supercoiling.
10. The sister chromatids are held together by a _____ .

III STATE WHETHER TRUE OR FALSE:

(5 x 1 = 5)

11. Bacterial DNA replication often results in two intertwined DNA molecules called catenanes.
12. The promoter sequence provides a signal to begin transcription.
13. Ribosomes are large macromolecules structure that act as the catalytic site for polypeptide synthesis.
14. The transcriptional regulation involves the action of regulatory proteins.

IV WRITE IN ONE OR TWO SENTENCES**(3 x 2 = 6)**

15. Nucleoid.
16. Primosome.
17. G₁ phase

SECTION – B

ANSWER ANY FOUR QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 500 WORDS. ALL ANSWERS CARRY EQUAL MARKS. DRAW DIAGRAMS WHEREVER NECESSARY

(4 X 10 = 40)

18. Discuss the structure and organizations of the mitochondrial and chloroplast genome.
19. What is cytokinesis? Describe the process of cytokinesis in plant cells.
20. Give an account of Repetitive sequences in Eukaryotic genome.
21. Explain the synthesis of DNA strand by telomerase.
22. How does DNA methylation inhibit gene transcription?
23. Give an account of regulatory proteins.
24. How does post translation regulation occur via feed back inhibition?

SECTION – B

ANSWER ANY QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 1200 WORDS. ALL ANSWERS CARRY EQUAL MARKS. DRAW DIAGRAMS WHEREVER NECESSARY

(2 X 20 = 40)

25. Describe how the binding of the iron regulatory factor affects the mRNAs for ferritin and the trans ferritin receptor. How does iron influence the process?

(OR)

Describe the role of microtubules in chromosome movement during mitosis & meiosis.

26. Discuss the mechanism of transcription in Prokaryotes.

(OR)

Discuss the sequence involved in protein synthesis.
