

SUBJECT CODE: 19BT/MC/CM54  
B. Sc. DEGREE EXAMINATION, NOVEMBER 2022  
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY  
FIFTH SEMESTER

COURSE : MAJOR – CORE

PAPER : CELL AND MOLECULAR BIOLOGY

TIME : 3 HOURS

MAX.MARKS:100

SECTION – A

ANSWER ALL QUESTIONS

(18 x 1=18 marks)

I. CHOOSE THE CORRECT ANSWER:

1. The Fluid Mosaic model of plasma membrane was proposed by  
a. Danielli      b. Benson      c. Singer and Nicolson      d. Moran
2. The nuclear pores are  
a. circular      b. octagonal      c. hexagonal      d. pentagonal
3. Crossing over takes place in this prophase stage of meiotic division  
a. leptotene      b. zygotene      c. pachytene      d. diplotene
4. Unwinding of DNA is catalysed by  
a. endonuclease      b. exonuclease      c. polymerase      d. helicase
5. The codon that codes for Methionine  
a. AUG      b. GUG      c. UGA      d. AAA

II. FILL IN THE BLANKS:

6. Finger like projections in the inner membrane of mitochondrion is -----.
7. Primary constriction in the stained chromosome that stains lightly is called -----.
8. In the cell cycle new DNA are produced by replication during -----.
9. Translation of mRNA in eukaryotes takes place in the -----.
10. Operon model was proposed by -----.

III. MATCH THE FOLLOWING:

- |                          |   |                    |
|--------------------------|---|--------------------|
| 11. RER                  | - | Reduction division |
| 12. Basic proteins       | - | DNA POL III        |
| 13. Synaptonemal complex | - | Ribosomes          |
| 14. Kornberg             | - | trptophan          |
| 15. Co- repressor        | - | Histones           |

IV. STATE WHETHER THE FOLLOWING STATEMENTS ARE TRUE OR FALSE:

16. Z-DNA is a left handed helix .
17. Meiotic division takes place in meristematic cells .
18. DNA primer is needed for DNA synthesis .

**V. ANSWER ANY SIX QUESTIONS:****Each answer should not exceed 50 words.****(6x3=18 marks)**

19. Endoplasmic reticulum
20. Nucleosome
21. Lagging strand
22. tRNA
23. Inducer
24. Bivalent
25. Epigenetics
26. Cyclin
27. Peroxisomes

**SECTION B****ANSWER ANY FOUR QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 200 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY. (4x6=24)**

28. Explain the structure of Golgi Apparatus
29. Describe the stages of mitosis
30. Explain how DNA repair takes place in Photoreactivation.
31. Briefly write about the properties of the genetic code.
32. With schematic representations explain gene regulations in prokaryotes
33. Describe semi conservative mode of replication.

**SECTION C****ANSWER ANY TWO QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 1000 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY. (2x20=40)**

34. Illustrate and explain the structure and functions of mitochondrion.
35. Explain meiosis in detail.
36. With schematic diagrams explain DNA replication.
37. Give an account of gene regulation seen in trp operon.

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