STELLA MARIS COLLEGE (AUTONOMOUS)CHENNAI – 600 086
B. Sc DEGREE EXAMINATION, NOVEMBER 2021
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
FIFTH SEMESTER

SUBJECT CODE: 19BT/MC/CM54

PAPER : CELL AND MOLECULAR BIOLOGY

TIME : 3 HOURS **MAX.MARKS:100**

SECTION – A

ANSWER ALL QUESTION **(5 x 1=5 marks)**

I. FILL IN THE BLANKS

1. The organelles considered as Endomembrane system are _____ and _____.
2. The genetic factors that change an organism's appearance or biological function without changing the actual DNA sequence is called _____.
3. The acrosome of sperm cells is derived from the organelle _____. It plays an important role in packaging of _____.
4. Polytene chromosomes are also called as _____and is found in _____.
5. The process by which RNA strand are synthesized from DNA strands is called _____. The – 10 to -35 upstream sequence is _____.
6. Mitosis takes place in _____ while Meiosis occurs in _____.
7. The model of tRNA is called _____ and it helps in decoding message from mRNA to _____.
8. Arabidopsis thaliana is also called as_____ and it belongs to the family _____.
9. Two examples of single base alteration are_____ & _____.

II ANSWER ANY <u>THREE</u> IN 50 WORDS. **(3x3=9 marks)**

10. Cell theory & its relation with other biological sciences
11. Leading & Lagging strand
12. Differentiate Mitosis and Meiosis
13. Genetic code (6 points)

SECTION B

III ANSWER ANY <u>TWO</u> QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 200 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY. (2x6=12 marks)

14. Explain the different types of DNA polymerases and RNA polymerases.
15. a) Discuss the reasons, why Arabidopsis is selected as a model plant in research.

    b) Write short notes on DNA methylation.
16. a) Elaborate upon the biochemical structure and types of DNA.

    b) What are the different modes of DNA Replication.

SECTION C

IV ANSWER ANY ONE QUESTIONS.EACH ANSWER SHOULD NOT EXCEED 1000 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY. (1x20=20 marks)

17. a) Describe in detail the Structure, Function and Biogenesis of Mitochondria.
    b) Add a note on Enzymes present on the membranes of Mitochondria.
    c) Schematic diagram of Electron Transport Chain.

18. a) Describe in detail the Mechanism of Prokaryotic Translation.
    b) Give a detailed account of prokaryotic gene regulation using Lac operon and Try operon.