

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086**  
**(For Candidates admitted during the academic year 2019 – 2020 & thereafter)**

**B.Sc. DEGREE EXAMINATION - NOVEMBER 2024**  
**BRANCH VI A – ADVANCED ZOOLOGY & BIOTECHNOLOGY**  
**FIFTH SEMESTER**

**COURSE : MAJOR CORE**  
**PAPER : CELL AND MOLECULAR BIOLOGY**  
**SUBJECT CODE : 19ZL/MC/CM54**  
**TIME : 3 HOURS** **MAX. MARKS: 100**

**SECTION – A**

**ANSWER ALL QUESTIONS** **(10 x 3 = 30)**

1. What is membrane fluidity?
2. Comment on microtubules. Give their function.
3. Differentiate between Autocrine and Paracrine signaling.
4. Give the function of Peroxisomes.
5. What are the characteristics of a Cancer cell?
6. Comment on Tumour suppressor genes.
7. NHEJ is an error prone repair-Justify.
8. Illustrate difference between rolling circle model and theta model of replication.
9. What is RNA interference?
10. Define Operon. Give an example for the same.

**SECTION – B**

**ANSWER ANY FIVE QUESTIONS** **(5 x 6 = 30)**  
**(Draw diagrams where necessary)**

11. Compare and contrast a prokaryotic and eukaryotic cell.
12. Write brief notes on Polymorphism in lysosomes.
13. Highlight events in Cell cycle.
14. With suitable diagram describe Watson and Crick's double helical structure of DNA.
15. Elaborate characteristics of Genetic code.
16. Outline the steps involved in Post transcriptional modification of mRNA.
17. Explain briefly the intrinsic pathway of apoptosis.

**SECTION – C**

**ANSWER ANY TWO QUESTIONS** **(2 x 20 =40)**  
**(Draw diagrams where necessary)**

18. Summarize the various theories proposed to explain the structure of the plasma membrane.
19. Elaborate the various DNA repair mechanisms.
20. Give a detailed account of the structural organisation of Chromosome and mention the types of Chromosomes.
21. Outline the Ultrastructure of Mitochondria. Describe the process of Oxidation of Carbohydrates

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