

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086**  
**(For candidates admitted during the academic year 2023 – 2024 & thereafter)**

**M. Sc. DEGREE EXAMINATION - NOVEMBER 2024**  
**BIOTECHNOLOGY**  
**FIRST SEMESTER**

**COURSE : CORE**  
**PAPER : MOLECULAR BIOLOGY AND RECOMBINANT DNA TECHNOLOGY**  
**SUBJECT CODE : 23BY/PC/MR14**  
**TIME : 3 HOURS** **MAX. MARKS: 100**

<b>Q. No.</b>	<b>SECTION A (10 x 1 = 10)</b> <b>ANSWER ALL QUESTIONS</b>	<b>CO</b>	<b>KL</b>
1	Centriole takes part in the formation of _____	1	1
2	_____ are responsible for the digestion process in a cell.	1	1
3	Eukaryotic replication involves more polymerases than prokaryotic replication (True/False).	1	1
4	_____ enzymes separates the two strands of DNA during replication.	1	1
5	Lac operon is an example of (a) only positive regulation (b) only negative regulation (c) both positive and negative regulation (d) sometimes positive sometimes negative	1	1
6	TRP operon controls _____.	1	1
7	DNA ligase cleave DNA and forms stick ends of both sides of the fragments (True/False).	1	1
8	_____ enzyme is used in a PCR for amplification of sections of DNA.	1	1
9	DNA sequencing is done by _____ methods.	1	1
10	Which of the following is used for the analysis of compositional properties of RNA. (a) Southern blotting (b) Northern blotting (c) PCR (d) CHEF	1	1
<b>Q. No.</b>	<b>SECTION – B (5 x 2 = 10)</b> <b>ANSWER ALL QUESTIONS</b>	<b>CO</b>	<b>KL</b>
11	Comment on desmosomes.	1	2
12	Summarize replication.	1	2
13	Explain DNA methylation.	1	2
14	Discuss endonuclease.	1	2
15	Give the significance of RFLP.	1	2

<b>Q. No.</b>	<b>SECTION - C</b> <b>ANSWER ALL QUESTIONS</b>	<b>(4 x 10 = 40)</b>	<b>CO</b>	<b>KL</b>
16	Relate the function of microtubules in the support of the cytoskeleton. <b>(or)</b> Outline the process of the DNA repair mechanism.		2	3
17	Outline cell cycle regulation. <b>(or)</b> Present the strategies of recombinant technology.		2	3
18	Distinguish passive and active transport. <b>(or)</b> Outline post-translational modification in prokaryotes.		3	4
19	Organize how protein is processed. <b>(or)</b> Examine CRISPR – Caspase technology.		3	4
<b>Q. No.</b>	<b>SECTION – D</b> <b>ANSWER ALL QUESTIONS</b>	<b>(2 x 20 = 40 )</b>	<b>CO</b>	<b>KL</b>
20	Evaluate cell-cell communication. <b>(or)</b> Recommend the sequencing and blotting techniques for DNA analysis.		4	5
21	Propose intrinsic and extrinsic pathways of apoptosis. <b>(or)</b> Elaborate the steps involved in cDNA library construction.		5	6

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