

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

M. Sc. DEGREE EXAMINATION - NOVEMBER 2023
BIOTECHNOLOGY
FIRST SEMESTER

COURSE : ELECTIVE
PAPER : BIOINSTRUMENTATION
SUBJECT CODE : 23BY/PE/BI15
TIME : 3 HOURS

MAX. MARKS: 100

Q. No.	SECTION A Answer ALL Questions (10 x 1 = 10 marks)	CO	KL
1	Recall the fingerprint region in FTIR.	1	1
2	Write the wavelength of the UV region.	1	1
3	Expand FACS.	1	1
4	List the purpose of a DNA sequencer.	1	1
5	Define analytical ultracentrifugation.	1	1
6	Identify the stationary phase in Gas chromatography.	1	1
7	Define DGGE.	1	1
8	Name the dye used to visualize DNA in agarose gel electrophoresis.	1	1
9	Describe the SI unit of radioactivity.	1	1
10	Tell about spray dryer.	1	1
Q. No.	SECTION – B Answer ALL Questions (5 x 2 = 10 marks)	CO	KL
11	Summarize the components of confocal microscopy.	2	2
12	Discuss the different types of biosensors.	2	2
13	Illustrate a cation exchanger.	2	2
14	Explain the applications of microchip electrophoresis.	2	2
15	Indicate two radioisotopes used in medicine.	2	2
Q. No.	SECTION C Answer ALL Questions (4 x 10 = 40 marks)	CO	KL
16a	Demonstrate the principle and applications of Cryomicroscopy.	3	3
16b	(or) Present the steps in Mass Spectrometry.		
17a	Predict how a PCR experiment can detect the presence of a specific DNA sequence in a given sample.	3	3
17b	(or) Compute the steps involved in a Kjeldahl nitrogen determination.		
18a	Outline the principle and instrumentation of HPLC.	4	4
18b	(or) Investigate the principle and applications of 2D PAGE.		
19a	Outline what is scintillation? How is this property used to measure radioactivity in biological fluids?	4	4
19b	(or) Organize the concept of lyophilization and briefly discuss its types.		

Q. No.	SECTION – D Answer ALL Questions (2 x 20 = 40 marks)	CO	KL
20a	Convince how NMR Spectroscopy can be used to determine the structure of an organic compounds. (or)	4	5
20b	Evaluate how a DNA microarray experiment to identify specific gene expression pattern in a cancer cell.		
21a	Generate the steps involved in the separation of compound by gas chromatography? Explain with suitable illustrations. (or)	5	6
21b	Propose how will you separate Proteins based on their molecular weight? Will you use native PAGE or SDS PAGE? Why?		
