

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

M.Sc. DEGREE EXAMINATION, APRIL 2024
BRANCH III - PHYSICS
SECOND SEMESTER

COURSE : MAJOR ELECTIVE
PAPER : MEDICAL PHYSICS AND ULTRASONICS
SUBJECT CODE : 23PH/PE/MU15
TIME : 3 HOURS **MAX. MARKS: 100**

Q. No.	SECTION A (10 x 3 = 30 marks)	CO	KL
1.	What is blood pressure?	CO1	K1
2.	Write a note on pacemaker.	CO1	K1
3.	Give the principle of blood flow meter.	CO1	K1
4.	What is ultrasonic interferometer?	CO1	K1
5.	What is ultrasonic welding?	CO2	K2
6.	State the principle of EMG.	CO2	K2
7.	What are the uses of Anesthesia machine?	CO2	K2
8.	What is fluorescence?	CO2	K2
9.	Mention the use of adiabatic compressibility.	CO3	K3
10.	Give any three applications of food industry,	CO3	K3
Q. No.	SECTION B	CO	KL
	PART A Answer any <u>TWO</u> questions: (2 x 5 = 10 marks)		
11.	Bring out the salient features of EEG.	CO3	K3
12.	How laser spectroscopy is used in diagnosing cancer?	CO3	K3
13.	Explain the process of ultrasonic cleaning.	CO3	K3
	PART B Answer any <u>SIX</u> questions: (6 x 5 = 30 marks)	CO	KL
14.	Discuss the different lead configuration used in ECG.	CO4	K4
15.	Analyze the working of DC defibrillator with neat diagram.	CO4	K4
16.	Discuss the working of Laser Based Blood Cell Counter.	CO4	K4
17.	How intermolecular free length is used to study the strength of molecular interactions?	CO4	K4
18.	Explain the working principle of ultrasonic interferometer.	CO4	K4

19.	Distinguish between Haemodialysis and Peritoneal dialysis.	CO4	K4
20.	Explain Reflectance and Light Scattering Spectroscopy in detail	CO4	K4
21.	Examine the experimental set up of level meter.	CO4	K4
Q. No.	SECTION C Answer any <u>TWO</u> questions: (2 x 15 = 30 marks)	CO	KL
22.	Draw a block diagram of MRI system and explain the image reconstruction using it.	CO5	K5
23.	Explain how Electro Therapeutic Stimulator is used in physical therapy.	CO5	K5
24.	Explain how Nomoto's relation is used to establish an empirical formula for ultrasonic velocity in binary liquid mixtures.	CO5	K5
25.	Write an essay about ultrasonic microscopy.	CO5	K5
