Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 120021

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024
Fourth Semester
Biomedical Engineering
U19BM406 – MEDICAL PHYSICS
(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	State the physiological property of Electromagnetic waves.	2	K2	CO1
2.	Write four applications of electromagnetic spectrum in medicine.	2	K2	CO1
3.	List the different types of senses.	2	K2	CO2
4.	Define color blindness.	2	K2	CO2
5.	Define specific ionization.	2	K2	CO3
6.	What do you mean by half-life?	2	K2	CO3
7.	How does pair production occur?	2	K2	CO4
8.	What is Compton scattering?	2	K2	CO4
9.	What is meant as scintillation decay time?	2	K2	CO5
10.	What is Geiger–Muller Counters?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Explain the different types of Non-Ionizing radiation in detail.	13	K4	CO1
		(OR)			
	b)	Explain the various biological effects of low frequency non-ionizing radiations.	13	K4	CO1
12.	a)	Explain the physics of cutaneous sensation and its characteristics in detail.	13	K4	CO2
		(OR)			
	b)	Explain the physics of vision and its characteristics in detail.	13	K4	CO2
13.	a)	What is radionuclide generator? Explain radionuclide Generator and Technetium generator.	13	K4	CO3
		(OR)			
	b)	What is radioactive decay? Explain alpha, beta and gamma decay with suitable examples.	13	K4	CO3
14.	a)	Explain briefly about i. Photoelectric effect ii. Compton Scattering iii. Pair production and iv. Attenuation of Gamma Radiation.	13	K4	CO4
		(OR)			
	b)	Describe briefly about the mechanisms through which x- rays and gamma rays are absorbed in matter?	13	K4	CO4
15.	a)	Describe the operational principles of a gamma camera.	13	K4	CO5
		(OR)			
	b)	Describe the principles of gas-filled detectors.	13	K4	CO5

PART – C

(1 x 15 = 15Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Explain the construction and working of cyclotron particle accelerator with neat diagram	15	K4	CO3
		(OR)			
	b)	Explain the Sources of Radioisotopes Natural and Artificial radioactivity. Give its medical applications.	15	K4	CO3