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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

January / February 2025 Semester End Main Examinations

Programme: B.E. **Semester: VII**

Branch: Institutional Elective **Duration: 3 hrs.**

Course Code: 23PY7OERHP **Max Marks: 100**

Course: Radiation Hazards and Protection

Instructions: 1. Answer any FIVE full questions, choosing one full question from each Module.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		MODULE - I	*CO*	*PO*	Marks
1	a)	Define Radioactivity. Distinguish between different types of radiation emission and discuss their properties.	CO1	PO1	**10**
	b)	What is natural radiation? Explain the main sources of natural radioactivity.	CO1	PO1	**10**
		OR			
2	a)	Discuss the different possible radiation interaction mechanisms with matter.	CO1	PO1	**10**
	b)	Explain the terms (a) intensity (b) exposure (c) absorbed dose, (d) equivalent dose, and (e) effective dose mention their Modules.	CO1	PO1	**10**
		MODULE - II			
3	a)	Explain the responsibilities of nuclear medicine labs.	CO1	PO1	**10**
	b)	Define radiation monitoring. Explain the commonly used radiation monitoring instruments.	CO1	PO1	**10**
		OR			
4	a)	Explain the radiation monitoring and decontamination procedures.	CO1	PO1	**10**
	b)	Mention the plannings of nuclear medicine laboratory. Explain any three.	CO1	PO1	**10**
		MODULE - III			
5	a)	What are the different types of radiation emergencies? Explain any four.	CO1	PO1	**10**
	b)	Explain the general techniques used for disposing of radioactive.	CO1	PO1	**10**
		OR			

	6	a)	Explain the basic radiation surveillance procedures	CO1	PO1	**10**
		b)	Mention the regulatory aspects and licensing for production and usage of radionuclides. Explain any two in detail.	CO1	PO1	**10**
			MODULE - IV			
	7	a)	What are scintillators? Explain the different types of scintillation detectors.	CO1	PO1	**10**
		b)	Explain the working of gamma camera with neat labeled diagram.	CO1	PO1	**10**
			OR			
	8	a)	Discuss the applications of particle accelerators.	CO1	PO1	**10**
		b)	Describe the principle and working of positron emission tomography.	CO1	PO1	**10**
			MODULE - V			
	9	a)	Explain the different types of materials modification that can be done using radiation.	CO1	PO1	**10**
		b)	Write a note on industrial process tomography and advances in industrial radiography.	CO1	PO1	**10**
			OR			
	10	a)	What are radioisotopes? List out the essential characteristics of radioisotopes. Discuss the environmental applications of radioisotopes.	CO1	PO1	**10**
		b)	What is the mechanism of non-destructive testing? Explain different radiation processing technology.	CO1	PO1	**10**

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