A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 99B09

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2024

Elective

Biomedical Engineering

19UBM909- Medical Radiation Safety Engineering

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Give a short note on Free Radicles and its impact on cell?	CO1- U
2.	Why oxygen is act as a well-known radio-sensitizer.	CO3- Ana
3.	Define Stochastic and Non-Stochastic Effects.	CO1- U
4.	Give a few syndrome and its dose ranges with different species.	CO1- U
5.	Differentiate high and low dose rate brachytherapy.	CO1- U
6.	Give a brief note on possible radiation accidents in medicine.	CO1- U
7.	Define ICRP.	CO1- U
8.	List out radiation protection in medical imaging and radiation oncology	CO1- U
9.	Define radiation hazards.	CO1- U
10.	What are the possible radiation accidents in medicine?	CO1- U

PART – C (5 x 16= 80 Marks)

11.	(a)	Give a short note on Relative Biological Effectiveness of radiation particularly in DNA. Comparative analysis of radiation effect on differentiated and non-differentiated cells.	CO3- Ana	(16)
		Or		
	(b)	Give a brief note on radio-sensitizers. How do you examine natural or synthetic radio-sensitizers with an example?	CO3- Ana	(16)

12.	(a)	Give a short note on Stochastic and Deterministic Effects. Review on the acute effects of total body irradiation and long term biological effects of ionizing radiations.	CO3- Ana	(16)
		Or		
	(b)	Define radiation doses. Review on various techniques employed for limiting radiation doses from radioactive medical equipment.	CO3- Ana	(16)
13.	(a)	Describe the history of radiology and Explain nuclear medicine, diagnostic and its therapeutic approach.	CO1- U	(16)
		Or		
	(b)	Brief note on radiation oncology and explain how brachytherapy approach is involved in the radioactive sealed sources for the cancer treatment.	CO1- U	(16)
14.	(a)	Define free radicals and G-value. Elaborate the principles of radiation protection in diagnostic radiology and the protection of employees or the public.	CO1- U	(16)
		Or		
	(b)	Give a brief comment on unintended and accidental medical exposures and the safety procedures for pregnancy and Magnetic Resonance Imaging system.	CO1- U	(16)
15	(a)	Describe radiation monitoring system. Which method is more common to measure or control radiation, exposure to staff and patients?	CO1- U	(16)
		Or		
	(b)	Comment on waste disposal facilities. Explain radiation safety during source transfer operations, special safety features in accelerators.	CO1- U	(16)