

**Third Year B.Sc MRT Degree Regular/Supplementary Examinations  
April 2025  
Radiological Protection and Statutory Aspects**

**Time: 3 Hours**

**Max Marks: 100**

- *Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space*
- *Answer all parts of a single question together • Leave sufficient space between answers*
- *Draw table/diagrams/flow charts wherever necessary*

**Essays:** **(3x10=30)**

1. Explain principles of radiation protection, importance of ALARA principle and “Child-sizing” in pediatric CT
2. What are the categories for transport of radioactive materials. How are they classified. Explain in detail
3. Explain the effects of radiation on embryo and foetus and what are the hereditary effects of radiation

**Short notes:** **(8x5=40)**

4. Pocket dosimeter
5. Waste management in nuclear medicine
6. Relation between Relative Biological Effectiveness (RBE) and Linear Energy Transfer (LET)
7. Explain ‘Exposure’ and how it is measured
8. Safety measures required during source transfer in radiotherapy
9. Internal amplification in gas filled detectors and the advantages of it
10. Calculate the equivalent dose (HT) for a person exposed to 20mGy of 1 Mev neutron rays and 5mGy of alpha and 10 mGy of 6MV X-rays
11. Quality assurance in brachytherapy

**Answer briefly:** **(10x3=30)**

12. Roentgen and rad
13. Cell survival curve
14. KERMA
15. Natural radiation sources
16. Area monitor
17. Primary and secondary protective barrier
18. Ten-day rule
19. Disposal of Ir-192 source
20. Equivalent dose
21. Radiation dose to the lens of the eye and its protection measures

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