

**QP Code: 108391**

**Reg. No.....**

**Post M.Sc Diploma in Radiological Physics Regular/Supplementary  
Examinations October 2022**

**Radiation Safety**

**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*
- *Use of Calculators/physical and mathematical tables permitted.*

**Essay:**

**(2x14=28)**

1. Discuss the effects of time, distance and shielding in the external radiation hazards.  
A technician is handling an 8mCi Cs-137 source from a distance of 60Cm. Within what time He/ She will receive the monthly permissible dose equivalent. (10+4)
2. Discuss the radiation monitoring and protective measures used in a HDR brachytherapy installation to reduce the radiation exposure to staff.

**Short Essays**

**(4x8=32)**

3. Briefly discuss radioactive waste disposal. What are the sources of radioactive waste. How radioactive wastes are classified. What are the treatment techniques of solid, liquid and gaseous effluents.
4. What are the salient features of the AERB safety code "Radiation Therapy sources, equipment and installations".
5. Briefly discuss the planning of diagnostic facility.
6. Briefly discuss different modes of transport of radioisotopes. What are the special requirements for transport of large radioactive sources.

**Short Notes**

**(10x4=40)**

7. Effective dose.
8. Internal radiation hazards.
9. Use factor.
10. Categories of radioactive packages.
11. Swipe test.
12. Type of radiation accidents.
13. Special safety features in Co-60 machine.
14. Public exposures.
15. AERB dose limits.
16. Controlled area.

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