

**Post M.Sc Diploma in Radiological Physics Regular/Supplementary Examinations October 2019**

**Radiation Safety**

**Time: 3 hours**

**Max. Marks: 100**

- Answer all questions
- Use of Calculators/physical and mathematical tables permitted.

**Essay: (2x14=28)**

1. What are the emergency procedures in linear accelerator in case of power failure, treatment beam fails and fire accident while patient is on treatment table. Draw a neat sketch of 15 MV linear accelerator facility layout. (9+5)
2. Write responsibilities of employer in radiation facility. Calculate the barrier transmission factor in 15 MV linear accelerator room for the work load 10000cGy/week. The maximum permissible dose at outside primary wall should not exceed 1mSv/week. The primary wall is at 3 meters distance from isocentre. Given values for Use factor =1 and occupancy factor =1. (9+5)

**Short Essays (4x8=32)**

3. Briefly explain the system of dose limitation recommended by international commission on radiation protection.
4. Give 10 most important points to consider while doing plan for medical radiation installation.
5. Describe in detail the radiation hazards in brachytherapy and tele therapy departments
6. What is radioactive waste. Explain the general method of disposal

**Short Notes (10x4=40)**

7. What are the sources of background radiation.
8. Explain dose limitations to radiation workers and public as per Atomic Energy Regulatory Board.
9. Write effects of distance, time and shielding in shielding calculations
10. Personnel monitoring and give examples.
11. Write two important points to consider while planning of nuclear medicine facility.
12. Explain two radiations protective measures to be taken in radiotherapy department.
13. Which are the sources of radioactive waste in nuclear medicine department and radiotherapy dept.
14. Write permissible levels to dispose the radioactive waste.
15. Briefly explain on Atomic Energy Act and its content.
16. Give two reasons for radiation accidents in medicine.