QP Code: 106391 **Reg. No.....**

Post M.Sc Diploma in Radiological Physics Regular/Supplementary Examinations October 2023

Radiation Detectors and Instrumentation

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

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

1. (a)Explain Standard Air chamber. How the Dose in Grey absorbed at a point is measured by the chamber.
   (b) In a standard air chamber the limiting diaphragm has an area 0f 0.6cm2and length of the sensitive electrode is 7cm. After irradiation a charge of 1.13X 10 -7 Coulomb is collected. Density of air at STP is 1.293Kg/m3. Determine the Exposure at the centre of the chamber.
2. Explain in details different kinds of Scintillation Detectors

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

3. Working of Thermoluminescent Dosimeters
4. Discuss the operating characteristic of Geiger Muller Counter and Explain the role of Quenching agent
5. Compare advantages and disadvantages of organic and inorganic Scintillation Detectors
6. Explain Spectroscopy

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

7. Name Two TLD materials. Why impurity is added in a TLD material.
8. Area monitor
9. Photomultiplier tube
10. Whole body counter
11. Hand and foot monitor
12. MOFET detector
13. DC-DC converter
14. Parallel plate chamber
15. SSNTD
16. OSLD

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