

[LA 0512]

Sub. Code: 4015

M.Sc (MEDICAL PHYSICS) DEGREE EXAMINATION- MAY 2012

FIRST YEAR

Paper V – RADIATION DETECTORS AND INSTRUMENTATION

Q.P. Code: 284015

Time: Three hours

Maximum: 100marks

180 (Min)

Answer All questions.

I. Elaborate on:

Pages Time Marks  
(Max) (Max) (Max)

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|---|----|----|----|
| 1. Explain the principle of gas filled detectors. Discuss the construction and working of thimble ionization chamber.   | 17 | 40 | 20 |
| 2. Explain the basic principle of Thermoluminescent dosimeter (TLD). Discuss about TLD reader, personal monitoring badge, calibration and maintenance of dosimeter. | 17 | 40 | 20 |

II. Write notes on:

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|---|---|----|---|
| 1. Principle of MOSFET. How it is used in radiation dosimetry.  | 4 | 10 | 6 |
| 2. Explain desirable characteristics of thimble ionization chamber.   | 4 | 10 | 6 |
| 3. Construction and working of condenser type chambers.   | 4 | 10 | 6 |
| 4. Working principle of OP- AMP with schematic diagram.   | 4 | 10 | 6 |
| 5. Radiation field analyzer.  | 4 | 10 | 6 |
| 6. Use of well type ionization chamber in Brachytherapy source calibration.   | 4 | 10 | 6 |
| 7. Single channel analyzer and multichannel analyzer.   | 4 | 10 | 6 |
| 8. Film dosimetry system.   | 4 | 10 | 6 |
| 9. What are the different types of personnel monitoring dosimeters? Discuss in detail about any one dosimetry system. | 4 | 10 | 6 |
| 10. Liquid scintillation counting system.   | 4 | 10 | 6 |

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