

[LD 1013]

OCTOBER 2013

Sub. Code: 4017

M.Sc (MEDICAL PHYSICS) DEGREE EXAMINATION
(Revised Regulations for Candidates admitted from 2010-2011)

FIRST YEAR

PAPER VII – PHYSICS OF RADIATION THERAPY

Q.P. Code : 284017

Time : 3 hours

Maximum : 100 marks

Answer ALL questions

I. Elaborate on :

(2X20=40)

1. Describe the design and working of a Medical Electron linear accelerator.
2. Describe Low dose Rate (LDR), Medium Dose Rate (MDR), Pulsed Dose Rate (PDR) and High Dose Rate (HDR) in Brachytherapy. Compare HDR brachytherapy with LDR brachytherapy in detail. Describe the sources used in HDR and LDR remote after loading machines.

II. Write notes on:

(10X6=60)

1. Describe a CT Simulator and explain Virtual Simulation
2. Explain in detail the Treatment time calculation method and the factors used for calculating the treatment time calculation for a cobalt unit.
3. What are isodose curves and explain the methods of obtaining the same. Compare an open beam isodose curve with a 30° wedge isodose curve for a 6 MV photon beam
4. Explain beam directional devices and patient setup devices. Compare SSD and SAD treatment setups
5. What are the plan evaluation techniques? Explain them in detail with examples
6. What is pseudo isocenter? What is planning isocenter and how are these used for patient setup?
7. How EPID is used for patient setup?
8. What is in-vivo dosimetry and how is it performed?
9. What is inverse planning? Write a note on Optimization in External beam therapy
10. Write a note on commissioning and quality assurance of a Treatment Planning system
