

[LN 1018]

OCTOBER 2018

Sub. Code: 4031

**M.Sc. MEDICAL PHYSICS EXAMS
SECOND YEAR
PAPER I – ADVANCED TECHNIQUES OF RADIOTHERAPY**

Q.P. Code: 284031

Time : Three hours

Maximum : 100 Marks

I. Elaborate on: **(2 x 20 = 40)**

1. What is the role of image guidance in radiation treatment delivery? Explain in detail the different techniques of delivering Image Guided Radiotherapy (IGRT).
2. Describe in detail the sources, the dose calculation formalism and the dose delivery systems used in Intravascular Brachytherapy.

II. Write notes on: **(10 x 6 = 60)**

1. Different techniques of Intensity Modulated Radiotherapy (IMRT) delivery.
2. Treatment planning and dosimetry of plaque-based Brachytherapy.
3. Components of the Three-dimensional Conformal Radiation Therapy (3DCRT) treatment chain.
4. Quality assurance for Stereotactic Radiosurgery (SRS).
5. Electronic Brachytherapy and its advantages over External Beam Radiotherapy and Conventional Brachytherapy.
6. Four-dimensional Computed Tomotherapy (4DCT) and its role in improving the accuracy of Radiotherapy delivery.
7. Different detectors and phantoms used for patient-specific quality assurance (QA) for Intensity Modulated Radiotherapy (IMRT).
8. Role of image registration and fusion in accurate image segmentation in Radiotherapy Treatment Planning.
9. Analytical Anisotropic Algorithm (AAA) and its advantages over Pencil Beam Convolution (PBC) in dose calculation.
10. Intra-operative radiotherapy and its advantages over conventional techniques in Radiotherapy.
