

MANIPAL UNIVERSITY

FOURTH SEMESTER M.Sc. (MEDICAL RADIATION PHYSICS)
DEGREE EXAMINATION – JUNE 2015SUBJECT: RECENT ADVANCES IN RADIOTHERAPY
(2011 SCHEME)

Monday, June 15, 2015

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

✍ **Answer ALL the questions.**

✍ **Draw diagrams wherever necessary.**

1. Discuss in detail X-ray knife and Gamma knife for SRS.

(20 marks)

2. Discuss the following aspects of IMRT commissioning:

2A. Mechanical Testing of DMLC

2B. Dosimetric Checks for “Sliding Window” Technique

(10+10 = 20 marks)

3. Explain in detail the different steps involved in 3D conformal treatment planning process.

(20 marks)

4. **Write short notes on:**

4A. Head Scatter

4B. Stereotactic Accuracy

4C. Correction based algorithm

4D. MLC- Leaf end shape

(5 marks × 4 = 20 marks)



MANIPAL UNIVERSITY**FOURTH SEMESTER M.Sc. (MEDICAL RADIATION PHYSICS)
DEGREE EXAMINATION – JUNE 2015****SUBJECT: CLINICAL RADIATION DOSIMETRY AND RADIATION STANDARDIZATION
(2011 SCHEME)**

Wednesday, June 17, 2015

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

✍ Answer ALL the questions.

✍ Draw diagrams wherever necessary.

1. Elucidate IAEA TRS 398 protocol for the output measurement of high-energy electron beams. (20 marks)

2. Discuss in detail Bragg-ray cavity theory and Burlin's cavity theory. (20 marks)

3. Discuss the conditions and limitations of free air ionization chamber. (20 marks)

4. **Write short notes on:**
 - 4A. Electrometer calibration
 - 4B. Effective point of measurement in TRS 277 protocol for photon beams
 - 4C. LET and stopping power
 - 4D. Clinical Dosimetry data for Manual Calculations in a Radiotherapy Department for external beam therapy with multiple energies (5 marks × 4 = 20 marks)

