

B.Sc. RADIOTHERAPY TECHNOLOGY
(New Syllabus 2014 - 2015)

THIRD YEAR

**PAPER III – QUALITY ASSURANCE, RADIOBIOLOGY AND
RADIATION SAFETY IN RADIOTHERAPY**

Q.P. Code: 801938

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Elaborate on the acceptance testing procedures of newly installed telecobalt unit.
2. a) Principles of radiation protection.
b) Annual limits of radiation exposure for occupational worker and member of public as per ICRP and AERB recommendations.
3. What are the responsibilities of licensee and radiation safety officer (RSO)?

II. Write notes on:

(8 x 5 = 40)

1. What is linear energy transfer (LET)? List two examples of high LET radiation along with their values.
2. Construction and working principle of pocket dosimeter and its applications.
3. Define fluence rate and energy fluence rate with appropriate units.
4. Explain the working principle of film badge with neat diagram.
5. Explain any three important quality assurance (QA) tests of simulator unit.
6. Draw a neat labeled layout of high dose rate brachytherapy unit.
7. Describe the biological effects of radiation.
8. Explain the use of gamma zone monitors in a radiation facility.

III. Short answers on:

(10 x 3 = 30)

1. 5R's of Radiobiology.
2. Electronic equilibrium.
3. Define quality assurance (QA).
4. Equivalent dose and its unit.
5. Define KERMA and its unit.
6. Ionization and excitation.
7. Optical and radiation field congruence test.
8. List three radiation emergencies in radiation facility.
9. What is dicentric chromosomal aberration?
10. What is oxygen enhancement ratio OER?
