

**B.Sc. IN RADIATION THERAPY TECHNOLOGY
(BRTT)**

Term-End Examination

June, 2015

**BAHI-043 : RADIOBIOLOGY AND RADIATION
PROTECTION**

Time : 3 hours

Maximum Marks : 70

Note : There are two parts Part-A, Part-B. Part-A consists of 8 questions. Answer any five questions from Part-A. Each question carries eight marks. Part - B consists of one (1) short answer question. It carries 30 marks. It is compulsory.

PART - A

1. Explain about 5 R's of Radiobiology. 8
2. Explain LQ model and concept of Alpha and Beta. 8
What is the equation for BED (BIOLOGICAL EFFECTIVE DOSE) ?
3. Explain the mechanism of cell killing. 8
4. Explain concept of fractionation. Explain hyperfractionation and hypofractionation with reason. 4+2+2=8

5. Define the dose limits as per ICRP - 103. 8
6. What is effective dose ? What is equivalent dose ? 4+4=8
7. Explain brachytherapy source storage, source preparation and source transportation. 4+2+2=8
8. Explain radiation monitoring devices. 8

PART - B

9. Write in brief about **any five** of the following : 5x6=30
- (a) Oxygen enhancement ratio, linear energy transfer and relative biologic effectiveness.
 - (b) Radio sensitizers and protectors.
 - (c) Stochastic and deterministic effect.
 - (d) Personnel monitoring device.
 - (e) Time, distance, shielding in radiation protection.
 - (f) Radiation weighting factor and tissue weighting factor.
 - (g) The procedure to follow in case of source struck in telecobalt unit.
 - (h) A typical layout for HDR brachytherapy (Ir-192) installation.