

**B.Sc. MEDICAL TECHNOLOGY (RADIOTHERAPY) (BRT)
SEMESTER -II EXAMINATION, JUNE-2026**

(BRT204) RADIATION EQUIPMENT AND RADIOBIOLOGY-II

[Time allotted: Three Hours]

[Max Marks: 100]

Note: Read all the instructions carefully

Answer all questions in serial order, Draw suitable diagrams wherever necessary

Q. 1. Objective type questions: (Attempt All)**(10 x 02 = 20)**

(Very short/ Short answer/ MCQ/ One liners/ Fill in the blanks/ True/False)

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| <p>a. Tungsten melting point (CO-1)</p> <p>i. 3422°C</p> <p>ii. 3375°F</p> <p>iii. 33.70°C</p> <p>iv. 337.0°C</p> <p>b. Proton Charge is (CO-1)</p> <p>i. Negative</p> <p>ii. Positive</p> <p>iii. No charge</p> <p>iv. None of the above</p> <p>c. Which of the following has maximum ionization potential? (CO-1)</p> <p>i. Electron</p> <p>ii. Proton</p> <p>iii. Helium ion</p> <p>iv. Gamma photon</p> <p>d. Half Life of Co60 (CO-1)</p> <p>i. 5.26 years</p> <p>ii. 5.26 days</p> <p>iii. 30 years</p> <p>iv. 30 days</p> <p>e. X-ray beam of energy in megavoltage therapy (CO-2)</p> <p>i. $\geq 1\text{MeV}$</p> <p>ii. $\leq 1\text{MeV}$</p> <p>iii. $\geq 1\text{KeV}$</p> <p>iv. $\leq 1\text{KeV}$</p> | <p>f. HVL is (CO-2)</p> <p>i. Half value layer</p> <p>ii. High value layer</p> <p>iii. High value lead</p> <p>iv. Half value lead</p> <p>g. In radiotherapy room how much lasers are needed (CO-2)</p> <p>i. 1</p> <p>ii. 3</p> <p>iii. 2</p> <p>iv. 4</p> <p>h. CT Simulator Couch is made up of (CO-2)</p> <p>i. Wood</p> <p>ii. Carbon fibre</p> <p>iii. Lead</p> <p>iv. None of the above</p> <p>i. Which of the following is most radio sensitive (CO-3)</p> <p>i. Bone</p> <p>ii. Muscles</p> <p>iii. Lymphocyte</p> <p>iv. Erythrocyte</p> <p>j. Atomic number is number of (CO-1)</p> <p>i. Proton</p> <p>ii. Electron</p> <p>iii. Proton + Neutron</p> <p>iv. Neutron</p> |
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Q. 2. Short notes/ Short answer type questions (Attempt any Five)**(05 x 04 = 20)**

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|---|--------|
| a. Grenz Ray therapy | (CO-1) |
| b. LQ Model | (CO-1) |
| c. Carcinogenesis | (CO-3) |
| d. What is indirect effect of radiation at cellular level | (CO-4) |
| e. Effective communication | (CO-2) |
| f. Hereditary effects of radiation | (CO-3) |
| g. Van De Graff Generator | (CO-2) |

Q. 3. Structured questions (Attempt any Three)**(03 x 10 = 30)**

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|---|--------|
| a. Role of Multi Leaf Collimator in Radiotherapy Planning | (CO-2) |
| b. Write note on virtual simulation workstation. | (CO-1) |
| c. Discuss the total body irradiation (TBI) in detail? | (CO-3) |
| d. Characteristic X-ray with suitable diagram | (CO-1) |

Q. 4. Long Answer/ Essay type questions (Attempt any Two)**(02 x 15 = 30)**

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| a. Write note on 5 R's of Radiobiology | (CO-3, CO-4) |
| b. Draw block diagram of medical Linear accelerator. What is function of klystron in Linear accelerator? | (CO-1, CO-2) |
| c. What is indirect effect of radiation at cellular level? Draw cell cycle diagram. | (CO-3) |