

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

(BRT203) RADIATION PHYSICS-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)

- | | |
|---|--|
| <p>a. Unit of absorbed dose is: (CO2)</p> <p>i. Gray</p> <p>ii. MeV</p> <p>iii. Roentgen</p> <p>iv. None of the above</p> | <p>f. One Gray is equal to: (CO2)</p> <p>i. 10 cGy</p> <p>ii. 100 cGy</p> <p>iii. 1000 cGy</p> <p>iv. None of above</p> |
| <p>b. HVL is: (CO3)</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. Ra-226 decay in Radon by emission of: (CO1)</p> <p>i. One α- particle</p> <p>ii. Two α- particles</p> <p>iii. One β-particle</p> <p>iv. Two β-particles</p> |
| <p>c. Atomic number of lead is: (CO1)</p> <p>i. 32</p> <p>ii. 27</p> <p>iii. 52</p> <p>iv. 82</p> | <p>h. Activity of 1 gm of Radium is: (CO1)</p> <p>i. 0.975 Ci</p> <p>ii. 1Ci</p> <p>iii. 0.5 Ci</p> <p>iv. 1.5 Ci</p> |
| <p>d. 1 MeV equals to: (CO1)</p> <p>i. 10^{-6} electron volts (eV)</p> <p>ii. 10^6 eV</p> <p>iii. 10^{10} eV</p> <p>iv. 10^{-9} eV</p> | <p>i. Charge of neutron is: (CO2)</p> <p>i. Positive</p> <p>ii. Negative</p> <p>iii. No charge</p> <p>iv. Equal to Beta particle</p> |
| <p>e. Co-60 decay in: (CO3)</p> <p>i. Ni-60</p> <p>ii. Co-59</p> <p>iii. Both i & ii</p> <p>iv. None of above</p> | <p>j. Number of proton in Co-60 nucleus is: (CO2)</p> <p>i. 27</p> <p>ii. 33</p> <p>iii. 34</p> <p>iv. 35</p> |

Q. 2. Write Short notes on / Short answer type questions (Attempt any Five)**(05 x 04 = 20)**

- | | |
|--------------------------------------|-------|
| a. Absorbed Dose | (CO4) |
| b. Ionization and Excitation? | (CO2) |
| c. Exposure | (CO1) |
| d. Pair Production | (CO3) |
| e. Half Life and Mean Life? | (CO4) |
| f. Beta Decay with Example | (CO4) |
| g. Internal Conversion | (CO1) |

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

- | | |
|--|-------|
| a. What is photoelectric effect and how it depends upon different parameters? | (CO3) |
| b. Write note on pair annihilation? | (CO3) |
| c. Explain briefly the photo disintegration with example. | (CO2) |
| d. What is ionizing radiation? Explain the different types? | (CO1) |

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

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|---|-------|
| a. How charge particles interact with material medium? What is Bragg peak? | (CO4) |
| b. Discuss the production of X-rays? Define Bremsstrahlung and characteristic X-rays? | (CO1) |
| c. Explain the process of Gamma ray emission. What are the difference between X-rays and Gamma rays? | (CO4) |