

**Second Year B.Sc MRT Degree Supplementary Examinations
September 2025
Radiation Physics I**

Time: 3 Hours

Total Marks:100

- Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space
- Answer all parts of a single question together • Leave sufficient space between answers

Essays:**(3x10=30)**

1. Discuss the factors affecting the quality of a radiograph. What are the advantages of Digital Radiography as compared to conventional radiography.
2. Describe the physical aspects of various generations of computed tomography. How does the helical CT differ from other types of CT.
3. What is meant by fluorescence and phosphorescence. Explain the principle and working of thermoluminescent dosimeter.

Short notes:**(8x5=40)**

4. Describe the advantage of rotating anode. How does the size focal spot of an x-ray tube affect the quality of image.
5. Draw the characteristic curve, write in detail about the regions of characteristic curve.
6. What is radiographic image. Discuss various factors which affect the radiographic image quality and contrast.
7. Explain with a neat diagram the construction and working of image intensifier tube.
8. Why rectification is necessary for production of x-ray. How would you get full wave rectification.
9. What is attenuation of radiation. Discuss the factors on which attenuation of x-ray depends.
10. Explain the different processes through which photons interact with matter.
11. Describe ionization and scintillation. How are these principles used in detection of radiation.

Answer briefly:**(10x3=30)**

12. Xeroradiography.
13. Intensification factor.
14. Thermionic emission.
15. Roentgen.
16. Grid ratio.
17. Attenuation.
18. TVL.
19. Half-life of a radioisotope.
20. Eddy current.
21. KERMA.
