

B.Sc. RADIOTHERAPY TECHNOLOGY**FIRST YEAR****PAPER II – BASIC PHYSICS, RADIATION PHYSICS AND BASIC OF
CLINICAL RADIOGRAPHY/IMAGING***Q.P. Code: 801907***Time: Three Hours****Maximum: 100 Marks****Answer all questions****I. Elaborate on:****(3 x 10 = 30)**

1. What are the different interactions of x-rays and gamma rays with matter? Explain any two in detail.
2. Give the principle of fluoroscopy and explain the construction and working of an image intensifier.
3. Elaborate on the principle of Magnetic Resonance Imaging (MRI) and the instrumentation required to produce an MRI image.

II. Write notes on:**(8 x 5 = 40)**

1. Relationship between wavelength, Frequency and Energy.
2. Differences between Magnetic Resonance Imaging and Computerized Tomography.
3. Construction and working of nuclear fission reactor.
4. Continuous x-ray spectrum.
5. Multi-section radiography.
6. Film processing.
7. Importance of filters in an x-ray tube.
8. Photoelectric absorption.

III. Short answers on:**(10 x 3 = 30)**

1. Pair production.
2. Linear energy transfer (LET).
3. Define Specific activity. Give its unit.
4. Mass attenuation coefficient.
5. Define Half value thickness (HVT).
6. State Joule's law with an example.
7. Positron emission tomography (PET).
8. Coherent scattering.
9. Define isotope. Give an example.
10. State Coulomb's law.
