THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0423] **APRIL 2023** **Sub. Code: 1907**

B.Sc. RADIOTHERAPY TECHNOLOGY
FIRST YEAR (Regulation 2014-2015 onwards)
PAPER II – BASIC PHYSICS, RADIATION PHYSICS & BASIC OF CLINICAL RADIOGRAPHY/IMAGING
Q.P. Code: 801907

Time: Three Hours **Answer All questions** **Maximum: 100 Marks**

I. Elaborate on : **(3 X 10 = 30)**

1. Describe production of X-ray with neat diagram.
2. Explain the basic principle of image formation in Magnetic Resonance Imaging.
3. With neat diagram, explain the principle and construction of Image Intensifier Fluoroscopy.

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

1. Artificial radioactivity.
2. Explain the factors affecting the quality and quantity of X-rays.
3. Explain and draw the circuit diagram to control the kVp of X-ray unit.
4. Draw the decay scheme for Beta and Gamma emission.
5. Explain the interaction of charged particle with matter.
6. Characteristic curve of X-ray film.
7. Write down the differences between the CT and MRI.
8. Explain the basic principle of Single Photon Emission Computed Tomography.

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

1. Relationship between Energy and Wavelength.
2. What are Isotopes and Isobars?
3. Atomic number and Mass number.
4. Biological effects of MRI.
5. What is direct fluoroscopy?
6. What is mass attenuation coefficient?
7. Define half life with examples.
8. Write Ohm’s law and Joules law.
9. Hysteresis losses.
10. What is Coulomb’s law?

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