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

[AHS 1122] **NOVEMBER 2022** **Sub. Code: 1943**

B.Sc. RADIOTHERAPY TECHNOLOGY
FIRST YEAR (Regulation 2018-2019)
PAPER III – RADIOTHERAPY PHYSICS & PRINCIPLES OF RADIOTHERAPY
Q.P NO. 801943

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

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

1. Describe in detail about the construction and working of Co-60 teletherapy unit.
2. Describe the Intensity Modulated Radiotherapy.
3. What are the disadvantages of conventional radiotherapy? Describe briefly the three dimensional techniques and their advantages.

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

1. Factors that influence percentage depth dose.
2. Tissue Equivalent Materials.
3. Various patient immobilization devices used in radiotherapy.
4. Physical, biological half-life and their relationship.
5. Simulator.
6. Shielding blocks.
7. Explain SSD and SAD techniques and list their merits and demerits.
8. What is Radioactive series and radioactive equilibrium?

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

1. Ionization.
2. Wedges.
3. Secondary electrons.
4. Port film.
5. SRS.
6. What is the role of bolus in radiotherapy?
7. Define linear energy transfer and state its unit.
8. Usage of compensators.
9. Particle range.
10. Bragg curve.

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

[AHS 0423] APRIL 2023 Sub. Code: 1943

B.Sc. RADIOTHERAPY TECHNOLOGY
FIRST YEAR (Regulation 2018-2019 onwards)
PAPER III – RADIOTHERAPY PHYSICS & PRINCIPLES OF RADIOTHERAPY
Q.P. Code: 801943

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

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

1. Artificial Radioactivity. List out the various types of sources used in RT and their properties.
2. Describe in detail the construction and working of a remote after loading Brachytherapy unit.
3. Elaborate on Stereotactic Radiotherapy and Radio surgery and their advantages over other Radiotherapy techniques.

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

1. Total attenuation co-efficient.
2. Image Guided Radiotherapy.
3. Factors affecting Tissue Air Ratio, Back Scatter factor and Tissue Maximum Ratio.
4. Radio isotopes used in Medicine.
5. SRT and SRS.
6. Immobilization devices in Radiotherapy.
7. Relationship between half life and decay constant.
8. Tissue Equivalent Materials.

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

1. Decay Process of Co-60 Source.
2. Wedge filter
3. Tissue Maximum dose.
4. Port film.
5. Particle range.
6. What is the role of a phantom in dosimetry?
7. Define Linear Energy Transfer and state its unit?
8. What is the advantage of Tomotherapy over conventional RT?
9. Explain Binding Energy.
10. Absorbed dose.

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

[AHS 1123] **NOVEMBER 2023** **Sub. Code: 1943**

B.Sc. RADIOTHERAPY TECHNOLOGY
FIRST YEAR (Regulation 2018-2019 onwards)
PAPER III – RADIOTHERAPY PHYSICS & PRINCIPLES OF RADIOTHERAPY
Q.P. Code: 801943

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

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

1. Explain about the construction and working of a Remote afterloading Brachytherapy Unit.
2. Write about SSD, SAD and Rotational techniques. Write down the procedure to convert PDD at a particular SSD to PDD of another SSD.
3. Write in detail about the various modes of Interaction of Photons with matter.

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

1. Tissue Air Ratio.
2. Role of Immobilisation in Radiotherapy.
3. Styrofoam cutter.
4. Relationship between Linear attenuation coefficient and HVL.
5. Wave guide.
6. Phantom and its types.
7. Tissue compensators.
8. Procedure for Acquiring port films.

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

1. Attenuation.
2. Stopping power ratio.
3. Ionisation and excitation.
4. Energy absorption coefficient.
5. Wedges.
6. Physical characteristics of Electron beam.
7. Write any two Cytotoxic drugs.
8. Define Gray.
9. MLC.
10. Isodose curves.

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