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**MPH 551**

**Fourth Semester M.Sc. Degree Examination, September/October 2022**

**MEDICAL PHYSICS**

**Physics of Radiotherapy (Radiotherapy – I)**

Time : 3 Hours

Max. Marks : 70

- Instructions :** 1) Number the answers **properly**.  
2) Answer **all** questions.  
3) Give illustrations **wherever** necessary.

**PART – I**

Answer **any five** of the following.

**(5×4=20)**

1. Write a note on different shutter systems.
2. Define TAR, TPR and TMR.
3. Explain about tissue compensator.
4. Describe Clarkson technique for irregular fields.
5. Define R50, Rp, Bremsstrahlung tail in electron beam therapy.
6. Explain types of Electronic Portal Imaging Devices (EPID).

**PART – II**

Answer **all** questions following **internal** choice.

**(5×10=50)**

7. a) Describe the construction and working principle of Telecobalt unit.

**10**

**OR**

- b) i) Write about radiotherapy simulator.

- ii) What is virtual simulation ?

**(7+3)**

**P.T.O.**



8. a) i) Describe the characteristics of Photon PDD.  
ii) Write about the uses and applications of Radiation Field Analyser (RFA). **(5+5)**

OR

- b) Discuss in detail about beam modifying devices. **10**

9. a) Explain the parameters used to calculate :

- i) Treatment time in Cobalt therapy.  
ii) Monitoring Unit in LINAC. **(5+5)**

OR

- b) i) Write about beam obliquity and tissue in homogeneity.  
ii) Explain about Mantle and inverted 'Y' fields. **(6+4)**

10. a) Explain about effective SSD and its influences in electron beam dosimetry. **10**

OR

- b) i) Write about adjacent field separation and field shaping.  
ii) Explain in detail about electron energy selection for patient treatment. **(4+6)**

11. a) Write in detail about quality assurance of Medical Linear Accelerator facility according to the QA protocols. **10**

OR

- b) Write in detail about acceptance, commissioning and quality control of Telecobalt unit. **10**

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