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MPS 553

Fourth Semester M.Sc. Degree Examination, September/October 2022
MEDICAL PHYSICS
Modern Trends in Radiotherapy (Radiotherapy – II)

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. List the processes involved in treatment planning in radiation therapy.
2. Write brief notes on Gamma Knife and Cyberknife.
3. Brief about various dose calculation algorithms in external treatment plan.
4. Write a note on Gross Tumor Volume (GTV) and Clinical Target Volume (CTV).
5. List the ideal characteristics of Brachytherapy sources.
6. Write a note on Total Skin Electron Therapy (TSET).

PART – II

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

(5×10=50)

7. a) i) Describe in detail about ICRU 62.
ii) Explain in detail about Dose Volume Histogram.

(5+5)

OR

- b) Explain in detail about Total Body Irradiation (TBI).

10

P.T.O.



8. a) i) Explain Simulative planning procedures of SRS/SRT treatment planning.
ii) Write a note on patient specific QA of SRS/SRT planning. **(6+4)**

OR

- b) i) Explain in detail about Image Guided Radio Therapy (IGRT).
ii) Discuss the role of 4DCT in radiotherapy. **(5+5)**

9. a) Discuss the following :

- i) Maximum target dose
- ii) Mean target dose
- iii) Median target dose
- iv) Modal target dose
- v) Hot spots.

10

OR

- b) Write a note on ICRU 62 with respect to ICRU 50. **10**

10. a) Explain various types of Brachytherapy procedures. **10**

OR

- b) i) Write in detail about the Prostate Brachytherapy Seed Implantation procedure.
ii) What is Sievert integral ? **(7+3)**

11. a) i) Brief about energy and field selection in Electron Beam Therapy.
ii) Brief about management of air gap, beam obliquity and irregular patient surface in Electron Beam Therapy. **(5+5)**

OR

- b) Briefly describe the following :

- i) Total limb irradiation
- ii) Electron arc therapy
- iii) Intraoperative electron therapy.

(4+3+3)
