

**PG Degree Supplementary Examinations in Radiation Oncology  
(MD) November 2022**

**Paper IV - Recent Development in Clinical Oncology**

**Time: 3 hrs**

**Max marks:100**

- *Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space*
- *Answer all parts of a single question together • Leave sufficient space between answers*
- *Draw table/diagrams/flow charts wherever necessary*

**Essay:**

**(20)**

1. Discuss in detail about the indication and rationale of hypo-fractionated radiation therapy in carcinoma breast. Explain in detail about the technique of respiratory gated radiation therapy in carcinoma breast.

**Short essays:**

**(8x10=80)**

2. Particle ion therapy and its clinical implication.
3. Immunotherapy.
4. Difference between Tomotherapy and conventional linear accelerator.
5. Circulating tumor cells and circulating tumor DNA.
6. SABR.
7. Role of patient set-up LASERs in radiation therapy. Difference between single moving, 3 moving and 5 moving LASER system.
8. DVH. Enumerate the dose constraints and its implication for the following normal structures: spinal cord, brain stem, lung, heart, liver, kidney, rectum and bladder.
9. Management of radiation induced proctitis.