



RADIOTHERAPY

PAPER – I

RDG/D/14/41/I

Time : 3 hours

Max. Marks : 100

Important instructions:

- Attempt all questions in order.
- Each question carries 10 marks.
- Read the question carefully and answer to the point neatly and legibly.
- Do not leave any blank pages between two answers.
- Indicate the question number correctly for the answer in the margin space.
- Answer all the parts of a single question together.
- Start the answer to a question on a fresh page or leave adequate space between two answers.
- Draw table/diagrams/flowcharts wherever appropriate.

1. Discuss in detail the counseling of 25 year old lady whose mother has been diagnosed with breast cancer. Write the investigation, screening and follow up recommendations for the lady. 5+5
2. Describe the physical aspects of iridium – 192 including its photon energy, half life, exposure rate constant and decay process. Mention its applications. 7+3
3. Describe dose volume histogram (DVH). What are various types of dose volume histograms? What are advantages and disadvantages of DVH in radiation treatment planning? 2+4+4
4. Which tumor markers may be raised in carcinoma of ovary and germ cell tumors of ovary? Write the normal levels of CA-125. What is the diagnostic and prognostic significance of CA-125? 5+1+4
5. Discuss the role of tumor angiogenesis in tumor pathophysiology. List various activators and inhibitors of angiogenesis. Discuss one drug which uses tumor angiogenesis as a therapeutic target. 3+3+4
6. What are the functions of the following components of a linear accelerator:
 - a) Wave guide 1
 - b) Modulator 2
 - c) Electron gun 1
 - d) Magnetron 2
 - e) Primary collimator 2
 - f) Flattening filter 2
7. Discuss the pathway of circulation of cerebrospinal fluid. What is its relevance when craniospinal radiation is advocated? 5+5
8. What are univariate and multivariate analysis? How does one evaluate survival analysis on univariate and multivariate analysis? 5+5
9. Discuss the lymphatic drainage of esophagus. How would it impact the design of treatment portals treated with radical radiotherapy? 5+5
10. Describe the WHO classification of lung tumors. Write the latest staging system of lung cancer. 5+5
