

**RADIOTHERAPY**  
**PAPER – I**

RTH/D/17/41/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.

Write short notes on:

- a) What is cell survival curve? 3+4+3
  - b) Discuss the various components of the curve.
  - c) How would its shape differ for neutrons versus X-rays?
- a) What are the radio-isotopes commonly used in teletherapy? Give reasoning. 2+2+3+3
  - b) What are the radio-isotopes commonly used in brachytherapy. Give reasoning.
  - c) What are the current recommendations of image guided brachytherapy?
  - d) Enumerate the advantages & disadvantages of interstitial versus intracavitary irradiation in carcinoma cervix.
- a) Describe using a schematic diagram the various levels of lymph nodes of neck. 4+3+3
  - b) Write the AJCC staging of oral cavity cancer.
  - c) Write WHO classification of lung tumours.
- a) Discuss the various phases of a clinical trial. 4+2+2+2
  - b) What sample size is important in a clinical trial?
  - c) What are univariate and multivariate analysis?
  - d) What are the various types of DVH? What are the advantages of DVH?
- Draw the isodose curves for (representative of a typical beam): 2x5
  - a) Photon beam
  - b) Electron beam
  - c) Proton beam
  - d) 250 KV beam
  - e) Carbon ion

**P.T.O**

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| 6.  | Describe lymphatic drainage of :<br>a) Breast<br>b) Cervix<br>c) Anterior two thirds tongue   | 4+3+3 |
| 7.  | Mention half life & energy of following isotopes:<br>a) Cobalt 60<br>b) Iridium 192<br>c) Caesium 137<br>d) Radium 226<br>e) Tantalum 182 | 2x5   |
| 8.  | a) Sensitivity<br>b) Specificity<br>c) Odds ratio   | 3+3+4 |
| 9.  | Define & discuss factors affecting:<br>a) Photo electric effect<br>b) Compton effect<br>c) Pair production                                | 4+3+3 |
| 10. | Histological classification of :<br>a) Hodgkin's lymphoma<br>b) Non Hodgkin's lymphoma  | 5+5   |