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:

1. 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?

2. 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.

3. 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.

4. 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?

5. 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

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6. Describe lymphatic drainage of : 4+3+3
   a) Breast
   b) Cervix
   c) Anterior two thirds tongue

7. Mention half life & energy of following isotopes: 2x5
   a) Cobalt 60
   b) Iridium 192
   c) Caesium 137
   d) Radium 226
   e) Tantalum 182

8. a) Sensitivity 3+3+4
   b) Specificity
   c) Odds ratio

9. Define & discuss factors affecting: 4+3+3
   a) Photo electric effect
   b) Compton effect
   c) Pair production

10. Histological classification of : 5+5
   a) Hodgkin's lymphoma
   b) Non Hodgkin's lymphoma