

FINAL EXAM
JUNE 2014

NATIONAL BOARD OF EXAMINATIONS

RADIOTHERAPY

PAPER - IV

RTH/J/14/41/IV

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. Describe cell survival curve. Discuss in detail the genetic changes after irradiation. 5+5
2. Describe the Bragg's Peak. How proton interaction differs from photons in tissue? Mention tumours where protons have been used and their results. 3+4+3
3. How heavy ions are produced for clinical use? Mention various components of HADRON therapy machine. 4+6
4. Discuss the indications, techniques and results of stereotactic body radiation therapy in carcinoma lung. 3+4+3
5. Discuss various radio-isotopes and their characteristics, used for brachytherapy. 10
6. What is radiosensitivity? Discuss four commonly used radiosensitizing agents in clinical practice. 2+8
7. What is the principle of Intensity Modulated Radiation Therapy (IMRT)? Elaborate IMRT process mentioning dose prescription, dose constraints and DVH for carcinoma nasopharynx. 3+7
8. What do you understand by "P" value and significance level in a clinical trial? Discuss the methods for calculating sample size for a randomized controlled trial comparing two treatment modalities. 3+7
9. Discuss the utility of Hyperbaric Oxygen, Lasers and TACE in Oncology. 4+3+3
10. Describe the principles and equipment used for PET-CT. Discuss the role of PET-CT scan in radiation treatment planning. (2+3)+5