RADIOTHERAPY

PAPER – IV

RTH/J/15/41/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.*

Write short notes on:

1.	Depict the cell cycle in a diagram and enumerate the mechanisms of biological effects of ionizing radiation at the cellular level.		5+5
2.	Characteristics and the role of radio-isotopes in the management of thyroid carcinoma.		4+6
3.	a) List the types of radiation damage to mammalian cells and give the features associated with each of them. b) Mechanism of repair of the damages when radiation dose is given in fractions. c) What clinical applications could be derived from this process?		4+4+2
4.	a) Various investigative modalities used for the evaluation of mediastinal nodes in lung cancer. b) Role of stereotactic radiotherapy in early stage lung cancer.		6+4
5.	a) Molecular pathways involved in the pathogenesis of human papilloma virus infection. b) Role of human papilloma virus in: i. Head & Neck cancer ii. Carcinoma cervix iii. Carcinoma anal canal		4+(2+2+2)
6.	Radiotherapeutic and chemotherapeutic modalities available for management in hepatic oligometastasis.		5+5

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7.	a) Linear quadratic model in the practice of radiotherapy. b) Clinical implications of the alpha beta ratio in modern radiotherapy.		5+5
8.	a) WHO classification of histopathology for central nervous system tumours. b) Imaging, microscopy and molecular genetic features of oligodendroglioma and its management.		3+(2+2+3)
9.	a) Physical principles for the basis of Positron Emission Tomography and describe the various isotopes used in PET scans in current day practice. b) Current applications of PET-CT scan in Radiotherapy treatment planning.		(3+4)+3
10.	a) Physical properties of a Cobalt 60 source and the principles of radiation protection in the Cobalt unit and HDR Brachytherapy bunker. b) Biodosimetry in a post exposure situation.		(3+5)+2

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