

**RADIOTHERAPY**

**PAPER-IV**

Time: 3 hours  
Max. Marks:100

RTH/J/19/41/IV

**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) Define metastasis of unknown origin(MUO). 2+3+5  
b) What are common manifestations of MUO?  
c) Management of MUO at various body sites.
2. a) Hyperthermia in malignancy. 5+5  
b) Tumour-lysis syndrome.
3. a) Draw a diagram showing different phases of cell cycle. 4+6  
b) Describe briefly the importance of these phases in relation to radiotherapy and chemotherapy.
4. Briefly describe their clinical relevance: 2.5x4  
a) Mitotic Index (MI)  
b) Labelling Index (LI)  
c) Growth fraction (GF)  
d) Potential doubling time (Tpot)
5. a) Classify chemotherapeutic drugs in relation to different phases of cell cycle. Add a note on drug resistance. 4+6  
b) Describe the radiobiological mechanisms of radiation sensitization by chemotherapy drugs and enumerate the rationale in sequencing RT + CT.
6. a) Describe the rationale in screening for cancer. What is the importance of screening in general population? 6+4  
b) Which tumours are considered suitable for a screening program in our country? What are the recommendation for screening of breast cancer?
7. a) Define plating efficiency. 2+4+4  
b) Mechanism of cell killing by ionizing radiation.  
c) L-Q model.

**P.T.O.**

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|-----|---|-------|
| 8.  | a) Radiobiologic basis of fractionation.  | 2+2+6 |
|     | b) What will happen if total dose is given at a time?   |       |
|     | c) Acute, subacute and late toxicities of accidental whole body radiation exposure and its management.                |       |
| 9.  | a) WHO ladder for pain management.  | 4+3+3 |
|     | b) Basics of morphine prescription.   |       |
|     | c) Buprenorphine and fentanyl patch.  |       |
| 10. | a) Role of PET-CT scan in Oncology, its principles, its benefit; limitations and its impact on radiotherapy planning. | 7+3   |
|     | b) RECIST versus PERCIST criteria.  |       |

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