

POST GRADUATE EXAMINATION, MAY - 2016

MD RADIOTHERAPY  
(PAPER ONE)

BASIC SCIENCES RELATED TO ONCOLOGY, RADIATION PHYSICS AND RADIOBIOLOGY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions  
Illustrate with suitable diagrams.

- Q. 1. Describe anatomy of mediastinum in detail and enumerate the tumours of mediastinum? (20)
- Q. 2. Describe briefly the production of bremsstrahlung X-ray and its utility in radiotherapy. (20)
- Q. 3. Describe briefly: (3 x 10 = 30)
- a. 4 R's of radiobiology
  - b. Production of X-rays with the help of a diagram.
  - c. Various interactions of radiation with matter.
- Q. 4. Write short notes on: (5 x 6 = 30)
- a. Time dose fractionation
  - b. Radiation recall phenomenon
  - c. Cell survival curve
  - d. Radioactivity and decay constant
  - e. Gleason's scoring in prostate cancer

X

**POST GRADUATE EXAMINATION, MAY - 2016**

**MD RADIOTHERAPY  
(PAPER TWO)**

**PRINCIPLE AND PRACTICE OF RADIOTHERAPY**

**[Time allotted: Three hours]**

**[Max Marks: 100]**

**Note:** Attempt all questions  
Illustrate with suitable diagrams.

- Q. 1.** Describe the management of average risk medulloblastoma in a 6 year old child as per current recommendations. (20)
- Q. 2.** What are the various treatment options of an early carcinoma prostate in a 72 year old man? Discuss the pros & cons of radical radiotherapy in management of early carcinoma prostate. (20)
- Q. 3. Describe briefly:** (3 x 10 = 30)
- a. Management of early stage carcinoma lateral border of tongue.
  - b. Wilms tumor
  - c. Management of stage II B carcinoma cervix.
- Q. 4. Write short notes on:** (5 x 6 = 30)
- a. NACT in breast cancer
  - b. Altered fractionation in head and neck cancers.
  - c. Total skin electron therapy (TSET).
  - d. Role of radiotherapy in carcinoma penis.
  - e. Clinical trials summary in carcinoma anal canal using imaging CT/RT.

X

**POST GRADUATE EXAMINATION, MAY - 2016**

**MD RADIOTHERAPY  
(PAPER THREE)**

**CHEMOTHERAPY, BIOLOGICAL THERAPY AND PALLIATIVE CARE**

**[Time allotted: Three hours]**

**[Max Marks: 100]**

**Note:** Attempt all questions  
Illustrate with suitable diagrams.

**Q. 1.** Describe the classification of alkylating agents and their indications and major toxicities. (20)

**Q. 2.** Explain in detail the management of stage III non seminomatous germ cell testicular tumors. (20)

**Q. 3. Describe briefly:** (3 x 10 = 30)

- a. Antimicrotubule agents and their side effects
- b. Castration refractory carcinoma prostate
- c. Chemotherapy induced nausea and vomiting

**Q. 4. Write short notes on:** (5 x 6 = 30)

- a. Strong opioids
- b. Anti angiogenic agents
- c. Tyrosine kinase inhibitors
- d. Euthanasia and physician assisted suicide
- e. Cancer cachexia syndrome

X

POST GRADUATE EXAMINATION, MAY - 2016

MD RADIOTHERAPY  
(PAPER FOUR)

RECENT ADVANCES IN RADIOTHERAPY AND ONCOLOGY

[Time allotted: Three hours]

[Max Marks: 100]

Note: Attempt all questions  
Illustrate with suitable diagrams.

- Q. 1. Discuss biological rationale for stereotactic body radiation therapy (SBRT) and its applications in the management of cancer and its optimal integration with other treatment modalities. (20)
- Q. 2. Describe four – dimensional target delineation and its implication in modern management while planning with radiotherapy. Discuss various approaches for respiratory gating. (20)
- Q. 3. Describe briefly: (3 x 10 = 30)
- Ablative therapy for localized Hepato cellular carcinoma.
  - Proton therapy, its physical rationale and clinical applications.
  - Cyber knife and its applications in management of cancer.
- Q. 4. Write short notes on: (5 x 6 = 30)
- Mammosite
  - Tumor angiogenesis and vascular endothelial growth factor (VEGF).
  - Adaptive radiotherapy
  - Molecular targeted agents as radio-sensitizers.
  - Newer imaging modalities in evaluation of CNS tumors.

X

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**MD RADIOTHERAPY  
(PAPER ONE)**

**BASIC SCIENCES RELATED TO ONCOLOGY, RADIATION PHYSICS AND RADIOBIOLOGY**

[Time allotted: Three hours]

[Max Marks: 100]

**Note:** Attempt all questions  
Illustrate with suitable diagrams wherever required

- Q. 1.** Describe anatomy of anal canal. Illustrate its lymphatic drainage with diagram and its application in radiation treatment planning. (20)
- Q. 2.** Discuss in detail interaction of matter with ionizing radiation. Describe it with reference to photon beam energy used in external beam radiotherapy. (20)
- Q. 3. Describe briefly:** (3 x 10 = 30)
- Radiobiological basis of fractionation and various altered fractionation regimens in use.
  - WHO classification of lymphoid neoplasms and factors determining international prognostic index (IPI) in diffuse large cell lymphoma.
  - Advantages and limitations of cumulative and differential dose volume histograms (DVH).
- Q. 4. Write short notes on:** (5 x 6 = 30)
- Wedge filters and compensators
  - Radioactivity and decay constant
  - Cellular response to radiation- induced DNA damage
  - Pathology of Ewing's sarcoma
  - Paraneoplastic syndromes and management of syndrome of inappropriate antidiuretic hormone (SIADH)

**POST GRADUATE EXAMINATION, MAY - 2017**

**MD RADIOTHERAPY  
(PAPER TWO)**

**PRINCIPLE AND PRACTICE OF RADIOTHERAPY**

**[Time allotted: Three hours]**

**[Max Marks: 100]**

**Note:** Attempt all questions  
Illustrate with suitable diagrams wherever required

- Q. 1.** 62 year old postmenopausal lady diagnosed with locally advanced carcinoma breast stage T<sub>2</sub>N<sub>2</sub>M<sub>0</sub>.  
Describe in detail the treatment you would offer. **(20)**
- Q. 2.** What are the various treatment options of an early carcinoma prostate in a 72 year old man? Discuss the pros & cons of early option with up to date clinical evidence. **(20)**
- Q. 3. Describe briefly:** **(3 x 10 = 30)**
- a. Sino nasal tumors and management
  - b. Describe radiation treatment planning for carcinoma maxillary antrum
  - c. Enumerate the various oncological emergencies and describe the management of spinal cord compression
- Q. 4. Write short notes on:** **(5 x 6 = 30)**
- a. Radiation proctitis
  - b. Dose volume histograms
  - c. Total lymphoid radiation
  - d. ICRU 62
  - e. Prophylactic radiation to CNS in ALL

X

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**CHEMOTHERAPY, BIOLOGICAL THERAPY AND PALLIATIVE CARE**

**[Time allotted: Three hours]**

**[Max Marks: 100]**

**Note:** Attempt all questions  
Illustrate with suitable diagrams wherever required

- Q. 1.** Describe role of chemo-radiation in oncology. Substantiate your answer in management of small cell carcinoma lung. (20)
- Q. 2.** Mention classification of Non-Hodgkin's lymphomas. Describe management of diffuse large B-cell lymphoma-stage IIIB. (20)
- Q. 3. Describe briefly:** (3 x 10 = 30)
- a. Chemotherapy in osteogenic sarcoma
  - b. Palliative radiotherapy
  - c. Biological response modifiers
- Q. 4. Write short notes on:** (5 x 6 = 30)
- a. Taxanes
  - b. Hospice care
  - c. Pain control & WHO ladder
  - d. Imatinib
  - e. Herceptin

X

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**RECENT ADVANCES IN RADIOTHERAPY AND ONCOLOGY**

**[Time allotted: Three hours]**

**[Max Marks: 100]**

**Note:** Attempt all questions  
Illustrate with suitable diagrams wherever required

- Q. 1.** Describe the various radiotherapy techniques, their merits and demerits used for accelerated partial breast irradiation APBI in post BCS Ca. breast. (20)
- Q. 2.** What is the role of 'Gene signature' and 'Genomics' in radiation oncology practice? Mention emphasizing personalized medicine in modern era. (20)
- Q. 3. Describe briefly:** (3 x 10 = 30)
- a. Principles and role of SRS & SRT in brain secondaries
  - b. Principles and practice of image guided radiotherapy (IGRT)
  - c. Proton beam radiotherapy
- Q. 4. Write short notes on:** (5 x 6 = 30)
- a. Cancer vaccines
  - b. Hyperthermia
  - c. BRCA-I & BRCA-II
  - d. Cyber knife and its applications in management of cancer
  - e. Role of PET CT scan in management of Hodgkin's Lymphomas

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