POST GRADUATE EXAMINATION, JUNE - 2023

MD RADIATION ONCOLOGY

Paper I- 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 the anatomy of the uterus and its drainage areas. Write down the management of Stage II G3 endometrioid carcinoma. (20)

Q. 2. Describe the functioning of Linear accelerator with diagram. Compare it with Telecobalt unit. (20)

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

a. Physical properties of electron beam and its clinical applications.

b. Relationship between LET, OER and RBE with suitable diagram.

c. Late effects of ionizing radiation.

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

a. Clinical Trials.

b. BED (Biological Effective Dose).

c. ISO-dose charts.

d. Proton beam therapy

e. Radiotherapy Verification Systems.

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Paper II- Principle and Practice of Radiotherapy

[Time allotted: Three hours] [Max Marks: 100]

Note: Attempt all questions

Illustrate with suitable diagrams.

Q. 1. What are the indications of postoperative radiotherapy in cancer breast and describe in details radiotherapy techniques in pt2n2 post mastectomy infiltrative carcinoma left breast in 42 year old female. (20)

Q. 2. Write down Molecular classification of medulloblastoma. with risk stratification. Explain with suitable diagram the radiation therapy techniques for management of medulloblastoma in 12 year old child. (20)

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

- **a.** The volumes and portals for irradiation of resected squamous cell carcinoma right maxilla stage 3 with close margins in 35 year old male ,.
- **b.** Tumor lysis syndrome and its management.
- **c.** The management of 65 year old male with T2N0 high grade muscle invasive transitional carcinoma of urinary bladder.

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

- **a.** The treatment of Superior vena cava syndrome..
- **b.** Involved Field Radiotherapy (IFRT).
- **c.** Treatment of Radiation Proctitis.
- **d.** Nordic trial in Glioblastoma multiformae.
- **e.** Operational plans of radiation oncology Linac areas during Covid pandemic.

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Paper III- Chemotherapy, biological therapy and palliative care

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagrams.

Q. 1. Discuss the unique biology of Triple negative breast cancer and targeted agents in the treatment of advanced triple negative breast cancer. **(20)**

Q. 2. Elaborate the role of molecular targeted therapy in the treatment of squamous cell cancer of the head and neck. **(20)**

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

- **a.** Management of Febrile Neutropenia
- **b.** Role of Bevacizumab in metastatic colorectal carcinoma.
- **c.** Rationale in giving preoperative versus postoperative chemotherapy, advantages & disadvantages.

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

- **a.** Management of extravasation of chemotherapy
- **b.** Algorithm for Cancer Pain Management
- **c.** Germ line mutations
- **d.** Communication skills in oncology care.
- **e.** Mantle cell lymphoma

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Paper IV- Recent Advances in Radiotherapy and Oncology

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagrams.

Q. 1. Describe Four dimensional target delineation and its implication in modern management while planning with radiotherapy. Discuss various approaches for respiratory gating. **(20)**

Q. 2. What is stereotactic body radiation therapy (SBRT)? Describe any two cancers treated with SBRT with emphasis on Radiobiological principle. **(20)**

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

a. Clinical implication of Zetotherapy

b. Charged particle beams and mentions the advantages and disadvantages of Proton and Carbon beam therapy.

c. Deep Inspiration Breath Hold (DIBH) in breast cancer.

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

a. Cardiac Radiosurgery

b. Artificial Intelligence in radiation oncology treatment planning

c. Olaparib.

d. PET scans in radiotherapy planning of lung cancer.

e. Intellectual Property Rights Forest Plot