Question Paper

Exam Date & Time: 30-May-2024 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH SEMESTER B.Sc. RADIOTHERAPY TECHNOLOGY DEGREE EXAMINATION - MAY/JUNE 2024
SUBJECT: RTT2201 - PHYSICS OF EXTERNAL BEAM RADIOTHERAPY
(2020 SCHEME)

Marks: 100 **Duration: 180 mins.**

Answer all the questions.

1)	What is isodose curve? Discuss in detail about parameters of isodose curves. Draw an isodose distribution for a typical photon and electron beam.	(20)
2)	Discuss in detail about the concept of wedge filter and its types in radiotherapy.	(20)
3)	Discuss about various methods of acquisition of patient data for radiotherapy planning.	(10)
4)	Discuss about the concepts of treatment plan evaluation.	(10)
5A)	Write short note on KV and MV CBCT.	(5)
5B)	Write short note on conventional shielding block preparation.	(5)
5C)	Write a short note on EPID.	(5)
5D)	Write short note on phantoms.	(5)
5E)	Explain electron interactions with medium.	(5)
5F)	Explain CT simulator.	(5)
6A)	Define Scatter Air Ratio.	(2)
6B)	What is the optimum % of primary beam transmission through the block and HVL is considered acceptable for most clinical situations.	(2)
6C)	What is D_{max} for 6 MV and 15 MV photon beam?	(2)
6D)	Mention different types of wedges used in radiotherapy.	(2)
6E)	Define Tissue phantom ratio.	(2)

-----End-----

Question Paper

Exam Date & Time: 01-Jun-2024 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH SEMESTER B.Sc. RADIOTHEARPY TECHNOLOGY DEGREE EXAMINATION - MAY/JUNE 2024
SUBJECT: RTT2202 - PRINCIPLES AND PRACTICE OF RADIOLOGY PART - II
(2020 SCHEME)

Marks: 100 **Duration: 180 mins.**

Answer all the questions.

1)	Explain the basic principle of CT.	(20)
2)	Describe the concept and principle of the various generations of CT.	(20)
3)	Classify the types of CT detectors.	(10)
4)	Explain the basic principle of MRI.	(10)
5A)	Explain the advantages and disadvantages of CT.	(5)
5B)	Explain various components of the imaging system.	(5)
5C)	Explain slip ring technology.	(5)
5D)	Explain the back projection recontraction method.	(5)
5E)	Explain the simple mask subtraction.	(5)
5F)	Explain MRI safety.	(5)
6A)	Define pixels and their significance.	(2)
6B)	List the disadvantages of MinIP.	(2)
6C)	List the various accessories and equipment in the CT room.	(2)
6D)	List the disadvantages of digital fluoroscopy.	(2)
6E)	List the advantages of MRI.	(2)

-----End-----

Question Paper

Exam Date & Time: 03-Jun-2024 (10:00 AM - 12:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH SEMESTER B.Sc. RADIOTHEARPY TECHNOLOGY DEGREE EXAMINATION - MAY/JUNE 2024
SUBJECT: RTT2241 - PROGRAM ELECTIVE - I : PHYSICS OF BRACHYTHERAPY
(2020 SCHEME)

Marks: 50 **Duration: 120 mins.**

Answer all the questions.

1)	Write a note on various treatment techniques in brachytherapy.	(10)
2)	Derive the radioactive decay law and obtain the expression for half-life.	(10)
3A)	Write a note on Activity of brachytherapy in source strength measurement.	(5)
3B)	Manchester system intracavitory brachytherapy.	(5)
3C)	Specification for source strength.	(5)
3D)	Write a note on classification of brachytherapy on dose rate.	(5)
4A)	Define Point B.	(2)
4B)	Define mean life.	(2)
4C)	What are the advantages of brachytherapy source?	(2)
4D)	Mention the half-life, specific activity and exposure rate constant of cobalt 60 source.	(2)
4E)	Mentions the various source loading technique in Brachytherapy.	(2)

-----End-----