Question Paper

Exam Date & Time: 18-Jun-2024 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH SEMESTER M.Sc. MEDICAL RADIATION PHYSICS DEGREE EXAMINATION - JUNE 2024
SUBJECT: MRP6201 - RECENT ADVANCES IN RADIOTHERAPY
(2021 SCHEME)

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

Answer all the questions.

1)	Explain in detail the procedure for Total Body Irradiation Therapy.	(20)
2)	a) Explain in detail adaptive radiotherapy (ART). b) Explain about working principle of Tomotherapy.	(20)
3A)	Write a short note on Computed Tomography. What are the major differences between conventional CT scanners and CT simulators?	(10)
3B)	Explain different respiratory tracking systems used in radiation therapy.	(10)
3C)	Write a note on Image guided Brachytherapy.	(10)
3D)	Explain different portal imaging devices used in LINAC.	(10)
4A)	Explain in detail about Cyberknife.	(5)
4B)	Explain in detail ICRU reference points.	(5)
4C)	Explain step and shoot and sliding window techniques of IMRT delivery.	(5)
4D)	What is DVH? Mention the types. Explain each with diagram.	(5)

-----End-----

Question Paper

Exam Date & Time: 20-Jun-2024 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH SEMESTER M.Sc. MEDICAL RADIATION PHYSICS DEGREE EXAMINATION - JUNE 2024
SUBJECT: MRP6202 - CLINICAL RADIATION DOSIMETRY AND RADIATION STANDARDISATION
(2021 SCHEME)

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

Answer all the questions.

1)	Explain the IAEA TRS 277 protocol for the output measurement of high-energy Electron beam.	(20)
2)	Explain in detail about the calibration of protection level instruments.	(20)
3A)	Explain Polarity, electrometer and humidity correction factors.	(10)
3B)	Explain the standardization procedure for the brachytherapy sources in terms of Air Kerma Strength.	(10)
3C)	Explain Bragg-gray cavity theory.	(10)
3D)	Discuss about the phantoms used for reference and non-reference dosimetry.	(10)
4A)	Explain Air Kerma rate and it's relationship with Air Kerma strength.	(5)
4B)	Explain Ambient dose equivalent and directional dose equivalent.	(5)
4C)	Define Charged particle equilibrium.	(5)
4D)	Write a note on Clinical Dosimetry data required for Manual Calculations in a Radiotherapy Department for external beam therapy with multiple energies.	(5)

-----End-----