Question Paper

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

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER M.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - JUNE 2024
SUBJECT: MIT5201 - ADVANCED INSTRUMENTATION AND TECHNIQUES IN CT - II
(2021 SCHEME)

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

Answer all the questions.

1)	Explain scanning protocols for CT Brain angiographic Techniques.	(20)
2)	Explain the cardiac CT imaging techniques in detail.	(20)

3. **Explain the following:**

3A)	Discuss the indications, contraindications, procedures, and techniques of CT paediatric chest examination.	(10)
3B)	Discuss the factors affecting spatial and contrast resolution in CT.	(10)
3C)	Outline the factors affecting paediatric Ct dose and explain various dose reduction methods.	(10)
3D)	Compare each of the rendering techniques used in 3D imaging.	(10)

4. **Explain the following:**

4A)	Discuss the technical factors involved in CT fluoroscopy.	(5)
4B)	Applications of CT in radiation therapy.	(5)
4C)	Define flat-detector CT and outline its technical elements.	(5)
4D)	Explain the significant tasks of the CT technologist in performing a CT examination on a paediatric patient.	(5)

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Question Paper

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

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER M.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - JUNE 2024
SUBJECT: MIT5202 - RADIATION EVALUATION AND PROTECTION
(2021 SCHEME)

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

Answer all the questions.

1)	Explain in detail radiation units and quantities. Add a note on Radioactivity.	(20)
2)	Explain briefly the factors affecting the calculation for primary and secondary barrier shielding.	(20)
3A)	Outline the AERB guidelines for installation of Mammography Equipment.	(10)
3B)	Outline the techniques used to reduce radiation dose to the radiation worker.	(10)
3C)	Explain the advanced techniques for reduction of medical radiation dose in CT.	(10)
3D)	Function of Radiation personal monitoring devices.	(10)
4A)	List the radiation energy transfer determinants.	(5)
4B)	Explain the various radiation accidents globally and its impact on human life and environment.	(5)
4C)	Explain ALARA & ALARP principle and application in CT.	(5)
4D)	Explain Radioactivity and the units of measurements.	(5)

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Question Paper

Exam Date & Time: 22-Jun-2024 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER M.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - JUNE 2024
SUBJECT: MIT5203 - ADVANCED INSTRUMENTATION AND TECHNIQUES IN MRI-I
(2021 SCHEME)

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

Answer all the questions.

1)	Elaborate on various safety practices and guidelines in MRI to achieve high standards of patient care, safety and comfort.	(20)
2)	Discuss various components of the MR system. Elaborate shielding requirements during installation of MR scanner and propose methods to maintain magnetic field homogeneity.	(20)
3A)	Classify steady state gradient sequences. Add a note on MERGE sequence.	(10)
3B)	Outline the types of MR contrast media. Explain the applications of contrast media for the head and spine region.	(10)
3C)	Explain entry slice phenomenon and identify factors affecting the entry slice phenomenon. Add a note on its compensation techniques.	(10)
3D)	Discuss methods to reduce scan time and outline the related tradeoffs.	(10)
4A)	Illustrate k-space characteristics and traversal.	(5)
4B)	Compare STIR and FLAIR.	(5)
4C)	Discuss various techniques to improve the contrast to noise ratio in MRI.	(5)
4D)	Explain gradient characteristics.	(5)

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Question Paper

Exam Date & Time: 24-Jun-2024 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER M.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - JUNE 2024
SUBJECT: MIT5204 - CARE OF PATIENTS IN DIAGNOSTIC IMAGING
(2021 SCHEME)

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

Answer all the questions.

1)	Explain different routes of medication administration with examples. Add a note on role of radiographers for administration of medication and charting.	(20)
2)	Discuss the special conditions of patients that affect communication. Add a note on how cultural diversity may influence communication process.	(20)
3A)	Outline role of radiographer in effective documentation and medical record keeping.	(10)
3B)	Discuss the procedures for assisting the patients with cardiac arrest.	(10)
3C)	Explain in detail patient rights the radiographer is responsible for protecting.	(10)
3D)	Discuss in detail about the cycle of infection.	(10)
4A)	Outline the precautions to be taken during radiography of isolation patients.	(5)
4B)	Identify suitable patient transfer techniques for patients with spinal injury.	(5)
4C)	Summarize accreditation of health care organizations.	(5)
4D)	Explain patient care during bedside radiography of the patients in intensive care unit (ICU).	(5)

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