Question Paper

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER M.Sc. NMT (NUCLEAR MEDICINE TECHNOLOGY) DEGREE EXAMINATION - JUNE/JULY 2022
SUBJECT: NMT5201 - PET AND THERAPEUTIC RADIOPHARMACEUTICALS
(2021 SCHEME)

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

Answer all the questions.

1)	Write in detail C-11 radiochemistry and clinical application of commonly used C-11 radiopharmaceuticals and the rationale behind their use.	(20)
2)	Explain in detail about Tungsten-Rhenium generator and the recommended quality control guidelines to ensure its optimum performance.	(20)
3A)	Explain the basics of copper labelling chemistry.	(10)
3B)	Explain mechanisms for damaging effect of radionuclide therapy giving an example of targeted radionuclide therapy.	(10)
3C)	Briefly discuss the clinical application, rationale behind the clinical use of Y-90, P-32 colloid, Lu-177 dotatate, Re-186 HEDP, I-131.	(10)
3D)	Briefly describe the procedure for radiolabeling of Deoxy glucose with F-18.	(10)

4. **Write short note:**

4A)	HPLC	(5)
4B)	Production of O-15 and N-13	(5)
4C)	PET radio-pharmacy.	(5)
4D)	Iodine radioisotopes and radioactive properties.	(5)

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Question Paper

MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER M.Sc. NMT DEGREE EXAMINATION - JUNE/JULY 2022
SUBJECT: NMT5202 - IMAGING PHYSICS
(2021 SCHEME)

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

Answer all the questions.

1)	Discuss in detail working of a Gamma camera.	(20)
2)	Discuss in detail different image reconstruction techniques used in SPECT imaging.	(20)
3A)	Briefly explain the effect of attenuation on SPECT image and how can it be corrected?	(10)
3B)	What is annihilation coincidence detection? How is this concept applied in PET imaging?	(10)
3C)	Discuss in detail Depth of interaction effect and method to correct it.	(10)
3D)	Write a detailed note on PET/MRI hybrid imaging.	(10)
4A)	Write a short note TOF-PET.	(5)
4B)	Write a short note on 2D and 3D PET data acquisition.	(5)
4C)	Write a short note on semiconductor gamma camera.	(5)
4D)	Write a short note on FWHM of an imaging system.	(5)

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