THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0222] **FEBRUARY 2022** **Sub. Code: 2304**
(OCTOBER 2021 EXAM SESSION)

M.Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR
(Candidates admitted from 2019-2020 onwards – Paper IV)
(Candidates admitted from 2020-2021 onwards – Paper V)
PAPER IV & V – RADIATION PHYSICS AND RADIATION CHEMISTRY
Q.P. Code : 282304

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate notes on: **(2 x 20 = 40)**

1. Explain the construction and production of Radionuclides in a Nuclear Reactor.
2. What is pH value? Describe role of pH in preparation of radiopharmaceuticals.

II. Write Short Notes on: **(10x6 = 60)**

1. Explain beta plus and beta minus decay with examples.
2. What is radioactivity? Derive the decay equation $N = Noe(-\lambda t)$.
3. Radio isotopes used in Nuclear Medicine.
4. Liquid Scintillation Detectors.
5. Multi channel analyser system.
6. Describe the coordinate covalent bond.
7. Preparation of standard (Reference) solution.
8. Normality of solution.
9. Difference of Solute and Solvents.
10. What are Buffer solutions?

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0522] **MAY 2022** **Sub. Code: 2304**

M.Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR
(Candidates admitted from 2019-2020 onwards – Paper IV)
(Candidates admitted from 2020-2021 onwards – Paper V)
PAPER IV & V – RADIATION PHYSICS AND RADIATION CHEMISTRY
Q.P. Code : 282304

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate notes on: **(2 x 20 = 40)**

1. Explain the construction and production of Radionuclides in a Nuclear Rector.

2. What is pH value? Describe role of pH in preparation of radiopharmaceuticals.

II. Write Short Notes on: **(10x6 = 60)**

1. Explain beta plus and beta minus decay with examples.
2. What is radioactivity? Derive the decay equation $N = Noe(-\lambda t)$.
3. Radio isotopes used in Nuclear Medicine.
4. Liquid Scintillation Detectors.
5. Multi channel analyser system.
6. Describe the coordinate covalent bond.
7. Preparation of standard (Reference) solution.
8. Normality of solution.
9. Difference of Solute and Solvents.
10. What are Buffer solutions?

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1022] **OCTOBER 2022** **Sub. Code: 2304**

M.Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR
(Candidates admitted from 2019-2020 onwards – Paper IV)
(Candidates admitted from 2020-2021 onwards – Paper V)
PAPER IV & V – RADIATION PHYSICS & RADIATION CHEMISTRY

Q.P. Code : 282304

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate notes on: **(2 x 20 = 40)**

1. Describe in detail about types of radioactivity and explain physical characteristics Tc-99m and F-18 isotope commonly used in nuclear medicine application.

2. Explain about construction and functioning of gas filled radiation detectors.

II. Write Short Notes on: **(10x6 = 60)**

1. Explain the principle of thermo luminescence dosimeter.
2. Write about hydrogen ion concentration.
3. Write about covalent bonding.
4. Differentiate between solute and solvent.
5. Write about molecular structure.
6. Explain about beta minus decay with example.
7. Write about pair production.
8. Explain about chemical reaction.
9. Write about sub atomic particles.
10. Explain the function of scintillation detectors.

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