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

[AHS 0321] MARCH 2021 Sub. Code: 2304

(OCTOBER 2020 EXAM SESSION)

M.Sc. NUCLEAR MEDICINE TECHNOLOGY

FIRST YEAR (From 2019-2020 onwards)

PAPER IV – 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 cyclotron.
2. Write in detail about different types of chromatography.

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

1. Explain alpha decay with an example.
2. Derive the relationship between decay constant with half life.
3. Radio isotopes used in Nuclear Medicine.
4. Proportional counters.
5. Single channel analyser system.
6. Describe the electrovalent, ionic bond.
7. Radiochemical purity.
8. Hydrogen Ion concentration.
9. Valency and Atomic Weight.
10. Chelating agents.

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

[AHS 0921] **SEPTEMBER 2021** **Sub. Code: 2304**
(MAY 2021 EXAM SESSION)

M.Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR (From 2019-2020 onwards)
PAPER IV – 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 different types of Radiation detectors in detail?
2. Explain the basic principles of chromatography and Write in detail about different types of chromatography

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

1. What are the interactions of radiation with matter? Describe any two of them in detail.
2. Decay scheme of Tc-99m and Iodine-131.
3. Radio isotopes used in Nuclear Medicine.
4. Binding forces between nuclear particle.
5. Electron capture and gamma decay.
6. Single channel analyser system.
7. Redox reactions.
8. Solvent extractions.
9. Buffer solutions.
10. Gel chromatography.

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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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