

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

[AHS 0222]

**FEBRUARY 2022
(OCTOBER 2021 EXAM SESSION)**

Sub. Code: 2305

M.Sc. NUCLEAR MEDICINE TECHNOLOGY

FIRST YEAR

(Candidates admitted from 2019-2020 onwards – Paper V)

(Candidates admitted from 2020-2021 onwards – Paper VI)

PAPER V & VI – RADIATION BIOLOGY

Q.P. Code : 282305

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. What is the system of Radiation Protection. Explain how the radiation to the occupational worker can be minimized?
2. Explain in detail about the Time, Dose, Fractionation.

II. Write Short Notes on:

(10x6 = 60)

1. Radiation Induced Radicals in water.
2. Oxygen Enhancement Ratio (OER).
3. Human Cell Cycle.
4. Tissue Composition of Human body.
5. Law of Bergonie & Tribondeau.
6. Radiation Effects on DNA.
7. Radiation Effects on foetus.
8. Cell Survival Curve.
9. Annual Dose Equivalent Limits.
10. Biodosimetry.

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

[AHS 0522]

MAY 2022

Sub. Code: 2305

M.Sc. NUCLEAR MEDICINE TECHNOLOGY

FIRST YEAR

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

[AHS 1022]

OCTOBER 2022

Sub. Code: 2305

M.Sc. NUCLEAR MEDICINE TECHNOLOGY

FIRST YEAR

(Candidates admitted from 2019-2020 onwards – Paper V)

(Candidates admitted from 2020-2021 onwards – Paper VI)

PAPER V & VI – RADIATION BIOLOGY

Q.P. Code : 282305

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Explain detail about the Time, Dose and Fractionation.
2. Elaborate on biological effects of radiation with cells.

II. Write Short Notes on:

(10x6 = 60)

1. Draw the structure of a cell.
2. NTCP.
3. Law of Bergonie and Tribondeau.
4. Benign and malignant tumours.
5. Radiation sensitizers.
6. Cell survival curves.
7. Point mutations.
8. Cumulative radiation effect.
9. Radiation effects on DNA.
10. Radiation induced radicals in water.

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

[AHS 1023]

OCTOBER 2023

Sub. Code: 2305

**M.Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER VI – RADIATION BIOLOGY**

Q.P. Code: 282305

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Discuss the method on radiation interaction with cell.
2. Describe about principle of radiation protection.

II. Write Short Notes on:

(10x6 = 60)

1. Explain the function of kidney.
2. Write about cell cycle.
3. Write about chromosome aberration.
4. Explain about stochastic effects of radiation.
5. Write about potential lethal damage.
6. What is law of Bergoie and Tribondeau?
7. Write about function of mitochondria.
8. Write somatic effects of radiation.
9. Briefly explain LD50/30.
10. Explain radiation effects on blood forming organ.

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

[AHS 1024]

OCTOBER 2024

Sub. Code: 2305

**M.Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER VI – RADIATION BIOLOGY**

Q.P. Code: 282305

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2x20=40)

1. Describe type of radiation cell damage and factors modifying the cell damage.
2. Discuss about effects of chronic exposure to radiation.

II. Write Short Notes on:

(10x6=60)

1. Explain the radiation effect of eyes.
2. Write about types of tissue.
3. Write about radiation effect on embryo.
4. Explain about deterministic effects of radiation.
5. Write about repair mechanism of sub lethal damage.
6. Explain the concepts behind the justification of practice.
7. Write about cancer risk estimation.
8. Write about medical exposure.
9. Briefly explain LD50/60.
10. Explain radiation effects on GI tract.

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

[AHS 1025]

OCTOBER 2025

Sub. Code: 2305

**M.Sc. NUCLEAR MEDICINE TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER VI – RADIATION BIOLOGY**

Q.P. Code: 282305

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Deterministic and Stochastic effects of radiation.
2. Cancer risks in Nuclear Industry workers.

II. Write Short Notes on:

(10x6 = 60)

1. Radiation-induced chromosome aberrations.
2. Survival curve shape and mechanisms of cell death.
3. Reoxygenation.
4. Radiation weighting factor.
5. The cerebrovascular syndrome.
6. As low as reasonable achievable.
7. Effective doses in adults for routinely used positron emitters.
8. The structure of DNA.
9. The stages of Mitosis & its significance in therapeutic nuclear medicine.
10. Oxygen enhancement Ratio (OER).
