



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai

Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &

Accredited by NBA (B.E - CSE, EEE, ECE, Mech & B.Tech.IT)

COIMBATORE-641 035, TAMIL NADU



Reg. No:

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B.E/B.Tech - Internal Assessment - III
Academic Year 2024-2025 (Even Semester)
Sixth Semester
Biomedical Engineering
19BME308 – Medical Radiation Safety

B

Time: 1^{1/2} Hours

Maximum Marks: 50

Answer All Questions

PART – A (5*2=10 Marks)

- | | | Bloom's Level | CO | Industry / GATE |
|----|--|---------------|-----|-----------------|
| 1. | Tell about radiological incident and how could such a situation arise? | UND | CO4 | Gate 2022 |
| 2. | When an incident would become an emergency and what would then be initiated? | UND | CO4 | Gate 2021 |
| 3. | Outline the principles for handling radioactive accidents | UND | CO5 | |
| 4. | Recall Decommissioning | REM | CO5 | |
| 5. | Write about the consequences of releases of radioactivity to environment | UND | CO5 | Gate 2023 |

PART – B (2*13=26 Marks)

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|----|-----|--|----|-----|-----|
| 6. | (a) | Discuss the importance of the rapid detection of an abnormal situation and explain how such detection might be achieved in practice. | 13 | APP | CO4 |
|----|-----|--|----|-----|-----|

(OR)

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|----|-----|---|----|-----|-----|
| | (b) | Write a short set of emergency instructions to apply in the event of a spillage in a small laboratory handling about 100 MBq of a low-toxicity nuclide. | 13 | App | CO4 |
| 7. | (a) | Criticize on the insights that have been gained from major nuclear accidents over the past six decades | 13 | App | CO5 |

(OR)

- | | | | | | |
|--|-----|---|----|-----|-----|
| | (b) | Describe the various methods used to safely dispose the radioactive waste while minimizing environmental impact | 13 | App | CO5 |
|--|-----|---|----|-----|-----|

PART – C (1*14=14 Marks)

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|----|-----|---|---|-----|-----|
| 8. | (a) | i) Outline the steps to be taken by a research lab to identify potential contamination and ensure compliance with radiation safety protocols when a shipping box shows signs of leakage but no radiation exposure is detected by a GM survey meter? | 7 | ANA | CO4 |
| | | ii) Illustrate the possible exposure pathways resulting from releases of radioactivity to the atmosphere. How would the exposure from these pathways be limited? | 7 | ANA | CO5 |

(OR)

- | | | | | | |
|--|-----|---|---|-----|-----|
| | (b) | i) Explain the concept of a critical exposure pathway and analyze an example where this pathway involves a food chain, illustrating its potential impact | 7 | ANA | CO4 |
| | | ii) Outline the three general approaches used for radioactive waste disposal. For each approach, provide a practical example of how it has been implemented in real-world scenarios | 7 | ANA | CO5 |

Bloom's Taxonomy: REM – Remember UND – Understand APP – Apply ANA – Analyze EVA - Evaluate CRT - Create