

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
M.Tech I Year I Semester Regular & Supplementary Examinations February-2025
NUCLEAR ENGINEERING
(Thermal Engineering)

Time: 3 Hours**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 What is the need for enrichment of uranium? Describe the most efficient and elaborated methods suited to produce highly enriched U^{235} . CO1 L1 12M

OR

- 2 Explicate the following terms in detail CO1 L2 12M
(i) Breeding ratio (ii) Fertile Material (iii) Chain reaction.

UNIT-II

- 3 a Elastic Collisions are the important source for the nuclear power. Justify. CO2 L2 6M
b What do you know about Neutron transport? Explain. CO2 L2 6M

OR

- 4 a What do you understand by diffusion theory of approximation. CO2 L1 6M
b Distinguish between Elastic and inelastic collisions of atoms. CO2 L1 6M

UNIT-III

- 5 a Name and Explain various critical parameters in thermal reactors CO3 L1 6M
b What is the difference between Artificial Radioactivity and Natural Radioactivity. CO3 L2 6M

OR

- 6 a Name various parts of a Reactor and also mention the uses of each part. CO3 L1 6M
b How BWR differs from PWR. CO3 L1 6M

UNIT-IV

- 7 How do you dispose radioactive materials without damaging environment. CO4 L1 12M

OR

- 8 a What do you understand by Fission Product poison and reactivity coefficients. CO4 L2 6M
b List out the safety measures for the nuclear power plants. CO4 L1 6M

UNIT-V

- 9 Write equations for temperature distribution in reactor core. CO5 L2 12M

OR

- 10 How reactors are useful in defense. Explain. CO5 L2 12M

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