Course Code: 1930315 Roll No: **MLRS- R19**

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

II B.Tech I Sem Supplementary Examination, July-2022

Thermodynamics

(MECHANICAL)

Time: 3 Hours. **Max. Marks: 70**

Note: 1. Answer any FIVE questions.
2. Each question carries 14 marks and may have a, b as sub questions.

1	a)	Explain the construction and working of constant volume gas thermometer.	7M	CO1	BL4
	b)	Discuss about concept of continuum.	7M	CO1	BL2
2		What are the causes for irreversibility? Discuss in detail.	14M	CO1	BL2
3	a)	Derive steady flow energy equation.	7M	CO2	BL6
	b)	Discuss about first law of thermodynamics. What are the limitations? What is PMM-I	7M	CO2	BL2
4		Define Kelvin-Planck and Clausiu's Statements of second law of Thermodynamics and prove their Equivalence.	14M	CO2	BL3
5	a)	State and prove Clausius inequality. Write its significance.	7M	CO3	BL3
	b)	How do measure dryness fraction with separating and throttling calorimeter? Explain with the help of suitable sketch.	7M	CO3	BL4
6		How do you find out work done, heat transfer, change in internal energy, enthalpy and change internal energy for various thermodynamic processes for a perfect gas.	14M	CO3	BL3
7	a)	Define the terms Mole Fraction, Mass fraction, Volume fraction and partial pressure.	7M	CO4	BL1
	b)	Explain in detail about Dalton's Law of partial pressure and Avogadro's Laws of additive volumes.	7M	CO4	BL4
8		Draw p-v and T-s plots for Otto cycle indicating various energy interactions. Derive expressions for efficiency and MEP.	14M	CO5	BL6

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