SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year II Semester Regular & Supplementary Examinations October-2022
BASIC THERMODYNAMICS
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

1	a	Explain about Thermodynamic Equilibrium.	L2	6M
	b	Explain about Quasi Static Process.	L2	6M

OR

2	What is meant by thermodynamics equilibrium? Explains its types briefly.	L1	12M

UNIT-II

3	a	State second law of thermodynamics.	L1	6M
	b	The air in a system expands from a temperature of 600C to 3000C at a constant pressure of 2 bars. Calculate the heat transfer, work done and change in internal energy. The mass of the air is 0.6 Kg. Assume Cp=1.02 KJ/KgK and Cv= 0.71 KJ/KgK for air.	L3	6M

OR

4	Explain reversible and irreversible process.	L2	12M

UNIT-III

5	a	State Internal Energy and Enthalpy of Gas.	L1	6M
	b	Explain the differences between isothermal and adiabatic processes.	L2	6M

OR

6	Explain the differences between isochoric and isobaric processes.	L2	12M

UNIT-IV

7	Calculate the internal energy per kg of superheated steam at a pressure of 10 bar and a temperature of 300°C. Also find the change of internal energy if this steam is expanded to 1.4 bar and dryness fraction 0.8.	L3	12M

OR

8	Derive an expression for the thermal efficiency of Ericson cycle and draw P-V & T-S diagrams.	L4	12M

UNIT-V

9	Derive the expression for efficiency of Rankine cycle with P-V, T-S.	L3	12M

OR

10	a	Explain with the help of neat diagram about Regenerative Cycle.	L2	6M
	b	A steam power plant works between 40 bar and 0.05 bar. If the steam supplied is dry saturated and the cycle of operation is Rankine, Find:(i) Cycle efficiency, (ii) Specific steam consumption	L3	6M

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