



R18 Regulation

Subject code: 2P3CB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Supplementary Examinations, February 2024

**THERMODYNAMICS
(ME)**

Maximum Marks: 70

Date: 19.02.2024 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		CO	BTL
1	What are the Exact and Inexact differentials?	CO1	L2
2	Explain the principle of thermometry.	CO1	L2
3	Differentiate Available and Unavailable energy.	CO2	L3
4	Mention all Maxwell relations.	CO2	L3
5	Discuss why the Isobars in Mollier diagram diverge from one another.	CO3	L2
6	Explain the triple point of a pure substance.	CO3	L2
7	Differentiate Gravimetric and Volumetric Analyses.	CO4	L3
8	Explain Avogadro's Law of partial pressure.	CO4	L2
9	Draw the P-V and T-S diagrams of Atkinson Cycle.	CO5	L3
10	Define mean effective Pressure.	CO5	L3

Part-B

Answer All the following questions. (5X10M=50Marks)			CO	BTL
11	Sketch the Constant volume gas thermometer and explain	10M	CO1	L3
OR				
12	When a stationary mass of gas was compressed without friction at constant pressure, its initial state of 0.4m ³ and 0.105MPa was found to change to final state of 0.20m ³ and 0.105MPa. There was a transfer of 42.5kJ of heat from the gas during the process. Determine the change in internal energy of the gas?	10M	CO1	L4
13	Explain dry temperature, wet temperature, entropy and pure substance.	10M	CO2	L2
OR				
14	Describe Gibbs and Helmholtz function with neat diagram.	10M	CO2	L2
15	Explain Maxwell relation for internal energy and enthalpy.	10M	CO3	L3
OR				
16	Explain perfect gas law with diagram.	10M	CO3	L3
17	Explain mole of fraction, mass fraction and specific heat.	10M	CO4	L2

	OR			
18	Explain volume fraction and partial pressure for Avogadro's laws.	10M	CO4	L2
19	Explain otto cycle with neat sketch.	10M	CO5	L3
	OR			
20	Describe with PV and TS diagrams Stirling cycle.	10M	CO5	L2