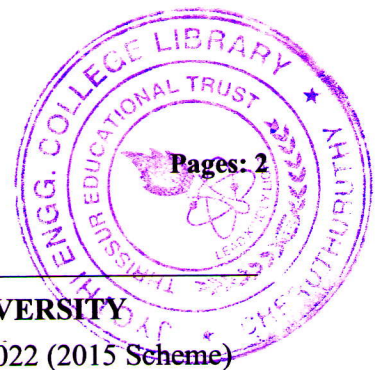D   **06000MR307122001**   **Pages: 2**

Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Fifth Semester B.Tech Degree (S,FE) Examination January 2022 (2015 Scheme)

Course Code: MR307
Course Name: THERMODYNAMICS

Max. Marks: 100   Duration: 3 Hours

(Use of Psychrometric chart permitted)
PART A
Answer all questions. Each question carries 5 marks

1	Explain the concept of continuum in detail.	5
2	Show that internal energy is a thermodynamic property.	5
3	Explain the two statements of Second law of thermodynamics	5
4	Explain entropy principle and its applications.	5
5	Define third law of thermodynamics. Explain in detail.	5
6	What is the value of Joule Thomson Coefficient for an ideal gas? Why?	5
7	Summarize the following	5

         1. Dry bulb temperature

         2. Wet bulb temperature

         3. Dew point temperature

8	What is meant by specific humidity and relative humidity?	5

PART B
Answer any three questions. Each question carries 10 marks

9	a)	Explain macroscopic and microscopic approach.	5
	b)	Discuss about the intensive and extensive properties.	5
10	a)	Elucidate different types of system with example.	6
	b)	Explain the various forms of work.	4
11		State first law of thermodynamics. Explain with Joule's experiment.	10
12	a)	Explain heat engine and heat pump with neat diagram.	6
	b)	What are the causes of irreversibility?	4
13	a)	Define Available Energy, Unavailable Energy and Dead state of a system.	6
	b)	Discuss in detail about second law efficiency.	4

PART C
Answer any two questions. Each question carries 15 marks

14	a)	Derive Maxwell's equations	8
	b)	Explain Joule- Kelvin effect. What is inversion Curve?	7
15	a)	Derive Tds equations (any one type)	5
	b)	Derive Clausius Clapeyron equation. What is its use?	10
16	a)	What is degree of saturation? What are its limiting values?	7
	b)	Explain Sensible heating and Sensible cooling	8
17		Atmospheric air with DBT of 40°C and WBT of 20°C is cooled to DBT of 15°C without changing its moisture content. Find a) Original relative humidity b) Final relative humidity c) Final WBT d) Heat removed.	15

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