CCode No.: ME305PC | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–I–Semester End Examinations (Regular) - January- 2022
THERMODYNAMICS
(MECH)

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

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

PART-A **(20 Marks)**

1. a)	Compare heat transfer with work transfer?	[2M]
b)	Define critical and triple point?	[2M]
c)	State zeroth law of thermodynamics?	[2M]
d)	What is the isentropic principle?	[2M]
e)	Write two or more limitation of the first law of Thermodynamics?	[2M]
f)	Define point and path function?	[2M]
g)	What is Dalton's law of pressure?	[2M]
h)	State thermodynamic wet bulb temperature?	[2M]
i)	Show the representation on P-V and T-S diagram for Lenoir cycle.	[2M]
j)	What is Bell- Coleman cycle?	[2M]

PART-B **(50 Marks)**

2.	Define irreversible process and Explain the causes of irreversibility and static process?	[10M]
	OR	
3.	a) Discuss about principle of thermometry and its reference points with concept of temperature.	[5M]
	b) Explain about Constant volume gas thermometer.	[5M]
4.	What is available energy and unavailable energy with reference to a thermodynamic cycle?	[10M]
	OR	
5.	State kelvin-Planck and Clausius statement and Explain the thermodynamic temperature scale.	[10M]
6.	What is heat engine, heat pump and refrigerator? Explain in detail with neat sketch	[10M]
	OR	
7.	Derive the steady flow energy equation and apply SFEE for a boiler.	[10M]
8.	Derive an expression for Gas constant, and Molecular weight of an ideal gas mixture?	[10M]
	OR	
9.	Discuss about dry bulb temperature, wet bulb temperature, specific humidity, Degree of Saturation and relative humidity?	[10M]
10.	Describe about sterling cycle, Atkinson cycle, Ericsson cycle, Otto cycle and Show the representation of P-V and T-S diagram?	[10M]
	OR	
11.	Explain the performance evaluation of Brayton and Rankine cycles and its significance?	[10M]

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