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Student University Roll No.:

School of Engineering

First Sessional Examination, Odd Semester (AS: 2022-23)

B. Tech: CS 19, 10 Year:1 Semester:1

Course Title: Basic Mechanical Engineering Course Code: BME3102	Max Marks: 30 Time: 1 *hr*

Instructions if any: Read the question Carefully.

	SECTION 'A' **Q.N.1. Attempt all parts of the following:**	Course Objective	Marks
a)	Define Zeroth law of thermodynamics.	CO1	1
b)	Define Quasi-static process.	CO1	1
c)	Prove that for W=0 for constant volume process.	CO2	1
d)	Define intensive property with example.	CO1	1
e)	Define extensive property with example.	CO1	1

	SECTION 'B' **Q.N.2. Attempt any two parts of the following:**	Course Objective	Marks
a)	Define thermodynamics. Differentiate between open system, closed system and isolated system.	CO1	7.5
b)	State the first law of thermodynamics applied to cyclic process and non-cyclic process.	CO2	7.5
c)	A spherical balloon of 1 m diameter contains a gas at 200 kPa and 300 K. The gas inside the balloon is heated until the pressure reaches 500 kPa. During the process of heating, the pressure of gas inside the balloon is proportional to the diameter of the balloon. Make calculations for the work done by the gas inside the balloon.	CO1	7.5
d)	Explain the difference between path function and point function.	CO1	7.5

	SECTION 'C'	Course Objective	Marks
Q.N.3. Attempt any one part of the following:			
a)	Explain what you understand by thermodynamic equilibrium.	CO1	10
b)	What do you understand by macroscopic and microscopic viewpoints?	CO1	10
c)	A mild steel piece of 5 kg mass is heated to 115 °C and dropped into an insulated vessel containing 30 kg of water at 20 °C. Due to heat flow from the hot mild steel piece, the rise in temperature of water is measured to be 3.5 °C. Make calculations for the specific heat of mild steel.	CO1	10

Table 1: Mapping between COs and questions

(Number of COs may vary from course to course)

COs	Questions Numbers	Total Marks
CO1	1-a,b,d,e 2-a,c,d, 3-a,b,c	56.5
CO2	1-c, 2-b	8.5