

**GUJARAT TECHNOLOGICAL UNIVERSITY****B.VOC- SEMESTER-I EXAMINATION – SUMMER 2025****Subject Code:21110302****Date:23-05-2025****Subject Name: General Mechanical Engineering****Time:02:30 PM TO 04:30 PM****Total Marks:50****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		<b>Marks</b>
<b>Q.1</b>	(a) Define:	<b>05</b>
	1. Thermodynamic Process    2. Universal Gas Constant 3. Thermodynamic System    4. Heat    5. Work	
	(b) Explain relationship between heat capacity and temperature.	<b>05</b>
<b>Q.2</b>	(a) Explain with neat sketch Zeroth law of thermodynamics.	<b>05</b>
	(b) Explain carnot cycle with schematic diagram.	<b>05</b>
	<b>OR</b>	
	(b) Derive the equation of work done of Isothermal Process.	<b>05</b>
<b>Q.3</b>	(a) Write advantages and limitation of polymer material over ferrous material.	<b>05</b>
	(b) What do you mean by non-ferrous metals? Name any four with their application.	<b>05</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Write function and application of Abrasive material.	<b>05</b>
	(b) Write characteristics of a force.	<b>05</b>
<b>Q.4</b>	(a) Explain Lami's theorem with suitable example.	<b>05</b>
	(b) Define: Moment and Couple. Write characteristics of moment and couple.	<b>05</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Explain parallelogram method and derive equation of resultant.	<b>05</b>
	(b) Explain method to determine resultant of non-concurrent forces.	<b>05</b>
<b>Q.5</b>	(a) State and explain Hook's law.	<b>05</b>
	(b) Explain with neat sketch: Tensile Stresses, Compressive Stresses and Direct Shear Stresses.	<b>05</b>
	<b>OR</b>	
<b>Q.5</b>	(a) What is Stress? Explain different types of stresses induced in mechanical components with neat sketch.	<b>05</b>
	(b) Enlist names of various elastic constants. Write importance and significance of poisson's ratio.	<b>05</b>

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