

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT
(An Autonomous College U/s UGC Act 1956)

B.VOC SEMESTER-I, SEMESTER END EXAMINATION – SUMMER 2025

Subject Code: 1PT102	Date: 04-06-2025
Subject Name: GENERAL MECHANICAL ENGINEERING	
Time: 11:00 AM to 01:00 PM	Total Marks: 50

Instructions

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Attempt all questions in the question paper.
3. The figures to the right of each question indicate full marks. Make suitable assumptions with proper justification wherever required.
4. Simple, non-programmable scientific calculators are permitted.
5. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A-Application, N-Analyze, E-Evaluate, C-Create), CO - Course Outcomes.

	Marks	BL	CO
Q.1 Multiple-Choice Questions	[05]		
(a) The polygon method is used to determine	1	R	4
(i) The resultant of several coplanar forces. (ii) The resultant of two forces only (iii) The equilibrium condition of a non-coplanar force system. (iv) The moment of a couple.			
(b) Which of the following best defines a thermodynamic system?	1	R	1
(i) A set of interacting chemical reactions. (ii) A quantity of matter or a region in space chosen for analysis. (iii) A process where energy is transformed into work. (iv) An isolated region where temperature is constant.			
(c) What is the strain in a material?	1	R	5
(i) The internal force within a material (ii) The change in the shape or size of a material relative to its original state (iii) The resistance of the material to deformation (iv) The external force applied to a material			
(d) Which of the following is NOT a primary classification of engineering materials?	1	R	3
(i) Metals (ii) Polymers (iii) Ceramics (iv) Fluids			
(e) The First Law of Thermodynamics is a statement of the conservation of	1	R	2

(i) Mass

(ii) Entropy

(iii) Energy

(iv) Temperature

Q.2 Attempt Any Three	[15]		
(a) Explain parallelogram method and derive equation of resultant force.	5	A	4
(b) State and prove Lami's theorem.	5	A	4
(c) Define force and classify the force systems with neat sketch.	5	U	4
(d) Define moment and couple giving two suitable examples.	5	U	4
Q.3 Attempt Any Three	[15]		
(a) Classify the engineering materials in detail.	5	U	3
(b) Explain different physical and mechanical properties of engineering materials.	5	U	3
(c) Define Stress and explain different types of stress in detail.	5	U	5
(d) Elaborate Hook's law with neat sketch.	5	A	5
Q.4 Attempt Any Three	[15]		
(a) Define thermodynamics and enlist areas of application for it.	5	U	1
(b) Explain Boyle's and Charles law with diagram.	5	U	1
(c) Write a short note on 1st law of thermodynamics.	5	U	2
(d) Explain kelvin plank and Clausius statements of 2 nd law of thermodynamics.	5	U	2
