

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

B. Voc. SEMESTER-I, SEMESTER END EXAMINATION - WINTER 2024

Subject Code: 1PT102

Date: 13-12-2024

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 Objective-Type Questions	[05]		
(a) Which of the following is true for a force?	1	R	4
(i) It only has magnitude			
(ii) It only has direction			
(iii) It has both magnitude and direction			
(iv) It neither has magnitude nor direction			
(b) What is stress?	1	R	5
(i) Force per unit area			
(ii) Deformation per unit length			
(iii) Force per unit volume			
(iv) Strain per unit area			
(c) Which type of material is characterized by its ability to return to its original shape after deformation?	1	R	3
(i) Elastic material			
(ii) Brittle material			
(iii) Plastic material			
(iv) Composite material			
(d) The Zeroth Law of Thermodynamics states that	1	R	1
(i) Energy cannot be created or destroyed, only transformed			
(ii) If two systems are in thermal equilibrium with a third system, they are in thermal equilibrium with each other			
(iii) The entropy of an isolated system always increases over time			
(iv) The total energy of an isolated system remains constant			

- (e) A coplanar force system consists of forces that 1 R 4
- (i) Lie along the same line. (ii) Lie at an angle to each other.
- (iii) Act on the same point. (iv) Lie in the same plane

- Q.2 Attempt Any Three** [15]
- (a) Explain system of forces in brief. 5 U 4
- (b) Differentiate coplanar concurrent system and non-coplanar concurrent system 5 R 4
- (c) Explain parallelogram method and derive equation of resultant. 5 A 4
- (d) Explain Lami's theorem of forces. 5 U 4
- Q.3 Attempt Any Three** [15]
- (a) Define following terms: Elasticity, Ductility, Hardness, Toughness, Malleability 5 R 3
- (b) Enlist physical and mechanical properties of engineering materials. 5 U 3
- (c) Define: tensile stress, shear stress, lateral strain, volumetric strain, Poisson's ratio 5 R 5
- (d) Define Stress and explain different types of stress in detail. 5 U 5
- Q.4 Attempt Any Three** [15]
- (a) Explain different types of thermodynamic system with example. 5 U 1
- (b) Define following terms: Pressure, Force, Property, State, Cycle 5 R 1
- (c) Define Thermodynamics and enlist areas of application for it. 5 R 2
- (d) Explain 1st law of thermodynamics. 5 U 2
