

GUJARAT TECHNOLOGICAL UNIVERSITY**B.VOC- SEMESTER-I EXAMINATION – SUMMER 2022****Subject Code:21110302****Date:29-07-2022****Subject Name:General Mechanical Engineering****Time:10:30 AM TO 12:30 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.

	Marks
Q.1 (a) Define Following Terms: 1. Mass 2. Weight 3. Pressure 4. Heat	05
(b) Define thermodynamic system. Explain types of system with examples.	05
Q.2 (a) State first law of thermodynamics. State its limitations.	05
(b) What is prime mover? State types of prime movers.	05
OR	
(b) Derive the equation of work done of Isothermal Process.	05
Q.3 (a) Prove that $C_p - C_v = R$ with usual notations.	05
(b) Derive the expression $PV/T = \text{Constant}$ with the help of Boyle's law and Charle's law.	05
OR	
Q.3 (a) What do you mean by non-ferrous metals? Name any four with their application.	05
(b) Give detail classification of engineering materials.	05
Q.4 (a) Explain with neat sketch Zeroth law of thermodynamics.	05
(b) Explain method to determine resultant of non-concurrent forces.	05
OR	
Q.4 (a) Define state, process, path and cycle with an example.	05
(b) Define: Moment and Couple. Write characteristics of moment and couple.	05
Q.5 (a) What is Stress? Explain different types of stresses induced in mechanical components with neat sketch.	05
(b) Enlist names of various elastic constants. Write importance and significance of poisson's ratio.	05
OR	
Q.5 (a) What is strain? Explain linear and shear strain.	05
(b) Define: Bulk Modulus, Modulus of Elasticity, Modulus of Rigidity, Thermal Strain, Volumetric Strain.	05
