GUJARAT TECHNOLOGICAL UNIVERSITY
BVOC- SEMESTER–I EXAMINATION – WINTER 2022

Subject Code:21110302   **Date:23-02-2023**

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:
		   I. Heat
		   II. Work
		   III. Thermodynamic System
		   IV. Thermodynamic Process
		   V. Universal Gas Constant
			05

	(b)	Explain system of forces with schematic diagram.	**05**
Q.2	**(a)**	Draw P-V diagram of Isochoric, Isothermal and Adiabatic process.	**05**
	(b)	State second law of thermodynamics. Explain application of second law of thermodynamics.	**05**
		OR	
	(b)	Explain first law of thermodynamics with suitable example.	**05**
Q.3	**(a)**	Explain parallelogram method and derive equation of resultant.	**05**
	(b)	Explain types of forces with suitable example.	**05**
		OR	
Q.3	**(a)**	Explain law of triangle of forces to derive resultant force.	**05**
	(b)	Explain Varignon's theorem.	**05**
Q.4	**(a)**	Define stress. Explain various types of stresses with stress distribution diagram.	**05**
	(b)	Draw and stress – strain diagram of mild steel material.	**05**
		OR	
Q.4	**(a)**	What is bulk modulus and modulus of rigidity? Derive relation between them.	**05**
	(b)	State application of normal stress and strains.	**05**
Q.5	**(a)**	Difference between Ferrous and Nonferrous materials.	**05**
	(b)	Enlist properties of abrasive materials.	**05**
		OR	
Q.5	**(a)**	Write five names of nonferrous materials with an application.	**05**
	(b)	Differentiate between thermo-plastic and thermo-setting material.	**05**

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