

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BVOC- SEMESTER-II EXAMINATION – WINTER 2022

Subject Code:21120304

Date:01-03-2023

Subject Name:Material Science and Metallurgy

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.

		Mark s
Q.1	(a) Provide the classification of engineering materials	05
	(b) Define: (1) Ultimate Tensile Strength (2) Hardness (3) Toughness (4) Plasticity (5) Elasticity	05
Q.2	(a) Discuss the effect of grain size on the properties of materials.	05
	(b) Explain a atomic packing factor.	05
<b>OR</b>		
	(b) Calculate the APF for BCC and FCC structures.	05
Q.3	(a) Provide the classification of steel according to carbon content.	05
	(b) What is alloys? Gives some example and their specific applications.	05
<b>OR</b>		
Q.3	(a) Discuss the effect of various alloying elements on mechanical properties of steel.	05
	(b) What is cast iron and explain the classification of cast irons?	05
Q.4	(a) Draw Fe-Fe <sub>3</sub> C equilibrium diagram.	05
	(b) Define Heat Treatment and classify heat treatment processes.	05
<b>OR</b>		
Q.4	(a) Draw TTT diagram.	05
	(b) Explain Hardening and Tempering process in detail.	05
Q.5	(a) What are the application of NDT?	05
	(b) Discuss the various non destructive testing applied for the inspection of welded structure.	05
<b>OR</b>		
Q.5	(a) Enlist different Non-destructive testing. Explain any one in details.	05
	(b) Explain the principle of Ultrasonic Testing.	05

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