

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION – SUMMER 2025

Subject Code:3172115

Date:23-05-2025

Subject Name:Surface Engineering

Time:02:30 PM TO 05:00 PM

Total Marks:70

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) Explain sand blasting process for surface preparation.	03
	(b) What is vapour phase degreasing? Explain.	04
	(c) Discuss the basic aspects for selection of surface preparation method. Explain hydroblasting process for surface preparation.	07
Q.2	(a) What is conversion coating? Why anodizing is best suited for aluminum.	03
	(b) Explain aluminium anodizing process.	04
	(c) Compare chromating and phosphating processes in terms of working and applications.	07
	OR	
	(c) What is carburizing? Discuss the liquid carburizing process in detail.	07
Q.3	(a) Discuss process controlling factors of tinning.	03
	(b) Explain process controlling factors of galvanizing,	04
	(c) Describe electroplating of copper. Draw a neat sketch.	07
	OR	
Q.3	(a) Describe Process parameters of gas carburizing.	03
	(b) Explain how properties get improved with carburizing.	04
	(c) Explain electroless plating. Discuss process controlling factors.	07
Q.4	(a) Give advantages of plasma spray coating method.	03
	(b) Explain how Multicomponent deposition is carried out in PVD.	04
	(c) Explain the Friction stir processing in Surface composites manufacturing.	07
	OR	
Q.4	(a) What is diffusion coating? Explain.	03
	(b) Describe Process parameters of chromizing.	04
	(c) Explain sputtering method of PVD. Give Mechanism of Sputtering.	07
Q.5	(a) Discuss applications of induction hardening.	03
	(b) Describe the use of ion beam implantation in surface modification.	04
	(c) Describe thermal spray coating. Mention the advantages of it.	07
	OR	
Q.5	(a) Describe the typical characteristics of thermal spray coatings.	03
	(b) Write a note on spray guns used in thermal spray coating.	04
	(c) Explain the Boronitriding process. Describe Process parameters.	07
