Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3172115 Date:11-12-2024

Subject Name: Surface Engineering

Time:10:30 AM TO 01:00 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)**	Discuss process control factors of galvanizing process.	**03**
	(b)	Explain galvanizing process.	**04**
	(c)	Describe electroplating process. With a neat sketch explain setup used.	**07**
Q.2	**(a)**	Explain the importance of surface engineering.	**03**
	(b)	Explain shot blasting process for surface preparation.	**04**
	(c)	Describe shot peening process for surface preparation. Give its advantages and limitations.	**07**
		OR	
	(c)	Describe electroless plating process. Discuss process control factors.	**07**
Q.3	**(a)**	List advantages and applications of physical vapor deposition.	**03**
	(b)	Discuss evaporation method of physical vapor deposition.	**04**
	(c)	Using suitable examples explain effect of spray gun on thermal spray coating structure and properties.	**07**
		OR	
Q.3	**(a)**	Give the difference between physical vapor deposition and chemical vapor deposition.	**03**
	(b)	Discuss factors affecting bond strength in thermal spray coating process.	**04**
	(c)	Explain the thermal spray coating processes. List industrial applications.	**07**
Q.4	**(a)**	Briefly explain how properties get improved with chromizing.	**03**
	(b)	Briefly discuss solid carburizing.	**04**
	(c)	Explain the carbonitriding process. Describe Process parameters.	**07**
		OR	
Q.4	**(a)**	Briefly explain how properties get improved with induction hardening.	**03**
	(b)	Describe Process parameters and applications of solid carburizing.	**04**
	(c)	Explain the Boronizing process. Describe Process parameters and applications.	**07**
Q.5	**(a)**	What is chromating? Give applications.	**03**
	(b)	Describe the use of plasma in surface modification.	**04**
	(c)	What is conversion coating? Explain the phosphating process	**07**
		OR	
Q.5	**(a)**	What is anodizing? Give applications.	**03**
	(b)	Describe the process steps for conversion coating.	**04**
	(c)	Describe the surface modification process of a given metallic sample by Friction stir processing method.	**07**

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