

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022****Subject Code:2172107****Date:03/06/2022****Subject Name:Surface Coating Technology****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) Discuss the requirement and applications of surface coating technology in engineering by giving suitable example.	03
	(b) List the type of coatings applicable on mild steel for i) Corrosion resistance ii) Wear and abrasion resistance iii) aesthetic appearance	04
	(c) Critically compare Mechanical, Chemical & Electro chemical methods of surface preparations.	07
Q.2	(a) Why Phosphate coating on mild steel material? Enlist the various types of phosphate coatings.	03
	(b) Discuss the role of oxide film in Aluminium anodizing. Discuss the properties developed after anodizing.	04
	(c) Critically compare Electrolytic plating process with Electro less plating. Give application of both the plating technologies.	07
OR		
	(c) Define galvanizing. Draw Neat Sketch of hot dip galvanizing process	07
Q.3	(a) Why Pickling is required? Draw the process flow chart of pickling only	03
	(b) Discuss working Principle of Electro less Nickel plating	04
	(c) Explain various factors affecting Electrodeposition	07
OR		
Q.3	(a) Define Sputtering? Draw Schematic only.	03
	(b) Compare Physical Vapour deposition & Chemical Vapour deposition.	04
	(c) Critically compare Boronizing and Boronitriding Process	07
Q.4	(a) What is thermal spray coating? How it can be achieved?	03
	(b) How Stainless Steels can be protected? Which Surface treatment do you suggest for it?	04
	(c) Discuss plasma spray coating technique with its advantages over other techniques.	07
OR		
Q.4	(a) Suggest type of surface treatment needed for removing black oxide layer from Silver ornaments.	03
	(b) Compare Liquid Carburizing & Gas Carburizing in terms of media used, quality and productivity of the process.	04

- (c) What is plasma Nitriding ? What are its advantages over other Nitriding Processes. How it can be achieved ? **07**
- Q.5** (a) List different quality tests of Electroplated article. **03**
(b) Discuss & draw the defects found in Electroplated objects and state the causes of it. **04**
(c) Describe Electroplating of Copper. Explain factors affecting Electrodeposition **07**
- OR**
- Q.5** (a) How the mill rust on rolled, forged components can be removed? Which process do you suggest? **03**
(b) Compare Physical Vapour deposition & Chemical Vapour deposition. **04**
(c) State the type of Surface Engineering on the following engineering components 1. Stainless steel kitchen utensils 2. Automobile body 2. Inlet /exhaust valves 3. Decorative Ash tray 4.Plumbing pipes 5. Springs for corrosive application 6. Car wheel rim 7. Bicycle sprocket. **07**
