Seat No.:	Enrolment No
GUJARAT TECHNO	OLOGICAL UNIVERSITY

Subject Code: 2172107 Date: 02/05/2017

BE - SEMESTER-VII (NEW) - EXAMINATION - SUMMER 2017

**Subject Name: Surface Coating Technology (Department Elective - I)** 

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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.
- Q.1 (a) Discuss the Scope of Surface Coating technology in Engineering field. 3+4
  State the requirements of the coating by giving examples of suitable application.
  - **(b)** State the importance of Surface preparation. Classify Mechanical, **3+4** Chemical & Electro chemical methods of surface preparation.
- Q.2 (a) What do you mean by Chemical Conversion Coating? Discuss the steps of Chromating Process with neat sketch.
  - (b) Explain Anodizing as a method of corrosion prevention. State the essential process parameters. Discuss the role of oxide film in Aluminium anodizing.

## OR

2+5

- **(b)** Explain the process of Phosphating on carbon steel. Discuss the mechanical & chemical properties developed on surface & its application in industries.
- Q.3 (a) Define Galvanizing. Draw a process layout of Hot dip Galvanizing of Carbon steel sheets.
  - (b) State Principles of Electro-less Plating and explain Electro-less Nickel 2+5 Plating

## OR

- Q.3 (a) What is hard chrome plating? Describe the Process & explain the surface 3+4 properties developed by this process.
  - (b) What is Passivation? Why it is required? State with the suitable example 3+4
- Q.4 (a) List the engineering components subjected to Nitriding process. Discuss the Surface properties developed and factors affecting Penetration depth.
  - (b) Critically compare Boronizing and Boronitriding Process. 4+3

### OR

- Q.4 (a) What is surface modification by Ion beam implantation? Discuss with example.
  - (b) Draw a Neat sketch of Sputtering method of Physical Vapour deposition 4+3 (PVD) and mention the steps for multicomponent
- Q.5 (a) Draw a Neat schematic of Vapour Phase degreasing process. Under which conditions this process should be selected? State with example.
  - (b) Discuss Plasma Spray coating process with neat schematic & explain its advantage over other techniques.

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- Q.5 (a) State the types of Surface engineering expected on the following engineering components. 1. Engine Cylinder Liner 2. Stainless Steel utensils 3. Aluminium Spindle for textile machinery 4. Engine piston rings 5. Engine Valves. 6. Springs under corrosion environment.
  - (b) State Principle of Electroplating and List down the types of Plating on engineering components with suitable example.

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