

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VII Examination-Nov/Dec.-2011

Subject code: 172107

Date: 29/11/2011

Subject Name: Surface Coating Technology

Time: 10.30 am-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.

Q.1 (a) Explain anodic electro-cleaning? Write its advantages and disadvantages. **05+02**

(b) Explain the various terms:

- (i) Shot peening. **04**
- (ii) Vapor phase degreasing. **03**

Q.2 (a) Explain the below terms: **03+04**
(i) Use of flux in galvanizing.
(ii) Use of fluoride in chromate coatings.

(b) Explain chromate coating with its reactions. Also write its applications. **05+02**

OR

(b) What do you understand by phosphating? Also describe the general phosphating reaction for coating formation. **02+05**

Q.3 (a) (i) What do you understand by electroplating? What is the purpose of electroplating? **02+02**
(ii) What should be the various characteristics of an electrolytic solution? **03**

(b) Explain electroplating of Nickel by Watt's solution and role of different constituents. **07**

OR

Q.3 (a) Explain electro-deposition of Tin using both methods(acid and alkaline). **07**

(b) (i) Write plating solution and operating condition of cyanide bath for copper plating. **04**
(ii) What are the troubles with cyanide bath for copper plating? **03**

- Q.4 (a)** Explain chemical vapor deposition technique. What are the various chemical reactions in CVD. **04+03**
- (b)** (i) Give a comparison between LCVD(laser CVD & PECVD(plasma enhanced CVD). **05+02**
(ii) Write a short note on laser CVD.

OR

- Q.4 (a)** What is sputtering? Write its types. Explain any one method of sputtering. **03+01+03**
- (b)** (i) Explain ion implantation process with its collision cascade process. **04**
(ii) Explain any one method of measuring coating thickness. **03**
- Q.5 (a)** Explain the vapor flux distribution of vacuum evaporation. What is hot mirror effect? **05+02**
- (b)** What do you understand by PVD? What are the various stages in growth of film formation by PVD? **03+04**

OR

- Q.5 (a)** (i) What do you understand by thermo-chemical methods of coating? **02**
(ii) Write the process for tinning of iron/steel. **05**
- (b)** Briefly explain the below terms:
- (i) Carburizing. **03**
 - (ii) Aluminizing. **02**
 - (iii) Boron nitriding. **02**
