

[A-98]

SARDAR PATEL UNIVERSITY**M.Sc. 4th Semester (Surface Coating Technology) (CBCS) Examination****Friday, April 24th, 2015****Time: 02:30 pm to 5:30 pm****Course No.: PS04CSCT03****Subject: Coating Application and Specialty Coatings.****Total Marks: 70**

- N.B.** (1) Marks allotted to the question are on its RHS
 (2) Illustrate your answers wherever necessary with the help of neat sketches & chemical equations

- Q.1 Choose the correct answer from the followings:
- Q.1.1 Surface treatment of steel substrate prior to painting is done to increase what of coating? 1
 (a) Hardness (b) Impact resistance (c) Adhesion (d) Flexibility
- Q.1.2 Anodisation is done on _____ 1
 (a) Wood (b) Iron (c) Aluminium (d) Cement
- Q.1.3 During Phosphating process which gas is released? 1
 (a) N₂ (b) H₂ (c) O₂ (d) Cl₂
- Q.1.4 Compound used on glass substrate for improving adhesion are _____ 1
 (a) Silanes (b) Titanates (c) Silicates (d) Phosphates
- Q.1.5 In paint application, transfer efficiency of airless spray gun is _____ 1
 (a) 25 (b) 40 (c) 70 (d) 90
- Q.1.6 _____ is not used as a blocking agent for Polyisocyanate/stoving polyurethanes for coil coatings 1
 (a) ε-Caprolactam (b) Imidazoles (c) Dibutyl Phthalate (d) 2-butanonoxime
- Q.1.7 _____ zinc based alloys coated onto steel is use to improve corrosion resistance in particular conditions which is having 55% aluminum, 1.6% silicon and 43.4% Zinc. 1
 (a) Galfan (b) Galvalume (c) Galinstan (d) Zamak
- Q.1.8 _____ is an ingredients that absorbs light and is responsible for the production of free radicals in free radical polymerized systems 1
 (a) Initiators (b) Inhibitors (c) Photo initiators (d) Photo stabilizer
- Q.2 Answer any Seven of the following short questions: 14
1. What is Mill Scale? Write the composition of mill scale on mild steel substrate?
 2. List the different methods of surface preparation.
 3. What is the function of conversion coating?
 4. How ISPC functions?
 5. What is meant by Transfer Efficiency in different paint application processes?
 6. Write the formulae of Phosphoric acid, Hopeite, Phosphophyllite and Vivianite.
 7. What makes smart coatings "Smart" and why are they receiving so much attention?
 8. List the oligomers for free radical initiated UV cure System. Explain in brief One of the Oligomer synthesis.
 9. What are Hygienic Coatings? Give the scope and properties of Hygienic Coatings?

Q.3 a Explain the sequence of chemical pre-treatment process of conversion coating on ferrous substrate for an automotive body vehicle prior to painting. 6

Q.3 b Explain in detail blasting technique to remove mill scale prior to painting steel with HDPC. 6

Or

Q.3 b Write in detail about adhesion promoters for plastic substrate. 6

Q.4 a Explain in detail chromate pretreatment of Aluminium substrate. 6

Q.4 b Write about brush and hand roller application technique. 6

Or

Q.4 b Write a note on electrostatic method of paint applications. 6

Q.5 a What are the different types of spray paint application techniques? Compare three different air related spray devices. 6

Q.5 b What is meant by the term electrodeposition? Explain in detail cathodic electrodeposition technology. 6

Or

Q.5 b What are the different methods of applying powder coatings? Explain any one in detail. 6

Q.6 a Define Coil Coating Process according to EN-10169:2012-06. Write the advantages for the coil coating industry to prosper over long term. 6

Q.6 b Differentiate UV versus EB Radiation Curing. 6

Or

Q.6 b What is Radiation Curing? Why use Radiation Curing? Write the benefits and limits of Radiation Cured Coatings 6

