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SEAT No. \_\_\_\_\_

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**SARDAR PATEL UNIVERSITY**

**M.Sc. 4<sup>th</sup> Semester (Surface Coating Technology) (CBCS) Examination**

Monday, April 16<sup>th</sup>, 2018

Time: 02:00 pm to 05:00 pm

Course No.: PS04CSCT03

**Subject: Coating Application & 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 Concentration of Zinc Phosphating solution is \_\_\_\_\_% as a water solution in Zinc Phosphate treatment. 1  
(a) 10-15% (b) 1-5% (c) 15-20% (d) 10-15%
- Q.1.2 In latex paint \_\_\_\_\_ used to reduce surface tension so as to wet the Pigment. 1  
(a) Solvent (b) Monomer (c) Initiator (d) Surfactant
- Q.1.3 In \_\_\_\_\_ cans, a coated blank is formed into a shallow cup and then drawn two further times to achieve desire height. 1  
(a) DWI (b) DRD (c) FDA (d) CFR
- Q.1.4 With Airless Spray gun high build or solvent less coating will apply up to \_\_\_\_\_ thickness in one pass of the gun. 1  
(a) 3  $\mu\text{m}$  (b) 30  $\mu\text{m}$  (c) 300  $\mu\text{m}$  (d) 3000  $\mu\text{m}$
- Q.1.5 In zinc phosphate conversion coating additives used are 1  
(a) Nickel salt (b) Ferrous phosphate (c) Tin salt (d) Tertiary zinc salt
- Q.1.6 In conventional spray gun, the air valve must close \_\_\_\_\_ the needle valve 1  
(a) After (b) Before (c) Simultaneously (d) None of these
- Q.1.7 Top coats for aircrafts are almost \_\_\_\_\_ 1  
(a) Epoxy amine (b) Polyurea (c) 2K Urethane (d) Urealkyd
- Q.1.8 Widely used solvent for solvent degreasing is 1  
(a) Dichloroethylene (b) Trichloroethylene (c) Phosphoric acid (d) Chromium Phosphate

**Q.2 Write the reasons for the following statements (any seven) :** 14

- Write about tastings of conversion coatings.
- How curtain coating can be applied on metal substrate?
- Which are two principles on which coater exist? Explain with diagram Single coater & Double coater.
- Give brief account of exterior can coatings.
- Write applications of UV radiation curing.
- Write down advantages of airless spraying.
- Give advantages of brush applications.

(1)

[P.T.O.]

- h) Which types of resins used in Aircraft Coatings.
- i) How 'direct pull out' test performs for testing of adhesion.
- Q.3 a Give the brief account of Zinc Phosphate, Iron Phosphate, and Chromates with chemical reactions as conversion coatings 6
- Q.3 b Why metal cleaning required? Write in details Solvent degreasing, Emulsion cleaners and alkaline cleaners. 6
- Or
- Q.3 b What are water reducible resins? Give important properties of water with water borne coatings. Write important properties of water reducible resins 6
- Q.4 a What is the principle involved in conventional spray application? Explain in details conventional spray application with diagram showing main parts of it. 6
- Q.4 b What are different types of paint application? Write in details about roller coating. Paint requirement to be used for this application? 6
- Or
- Q.4 b What is electrostatic spraying? Write down its principles and industrial applications with diagram 6
- Q.5 a Give brief on account of coil coatings. What are the requirements of paint for Coil Coatings? 6
- Q.5 b Write in detail about covalent bonding to Glass by giving suitable example of silanol group. 6
- Or
- Q.5 b Give details about adhesion to plastics with various techniques. Write various methods to evaluate adhesion to the plastics. 6
- Q.6 a Write principles of Anodic Electrodeposition (AED) coatings with diagram. What is Cationic Electrodeposition (CED)? Explain 6
- Q.6 b Write about non-stick coatings for cookware. Give quantitative testing of non-stick coatings. 6
- Or
- Q.6 b Write broad classes of UV cured coatings. Explain in details about Unimolecular Photoinitiators and Bimolecular Photoinitiators in free radical UV curing. 6

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