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SARDAR PATEL UNIVERSITY

M.Sc. 4th Semester (Surface Coating Technology) (CBCS) Examination

Saturday, 23rd March 2019

Time: 02:00 pm to 5:00 pm

Course No.: PS04CSCT23

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

Choose the correct answer from the following

Q.1. 1 In zinc phosphate conversion coating additives used are _____. **(1)**

(a) Nickel salt (b) Ferrous phosphate (c) Tin salt (d) Tertiary zinc salt

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 _____is the possible polymerization mechanism in radiation curable coatings. **(1)**

Radical polymerization (b) Emulsion Polymerization (C) Esterification (d) None of these

Q.1. 4 Which of the following treatment applies to improve adhesion on plastics? **(1)**

(a) Oxygen inhibition (b) Oxidizing flame (c) Fluoride accelerator (d) Wire Brushes

Q.1. 5 With Airless Spray gun high build or solvent less coating will apply up to _____ thickness in one pass of the gun. **(1)**

(a) 3 µm (b) 30 µm (c) 300 µm (d) 3000 µm

Q.1. 6 In Final Rinses, the bath pH generally within range of _____. **(1)**

(a) 1.0-2.4 (b) 2.5-4.5 (c) 4.5-6.5 (d) 6.5-8.5

Q.1. 7 The throwing power of paint is used to describe ability of paint _____. **(1)**

(a) thinning (b) to coat recessed area (c) to coat edges (d) uneven 'raggy' surface

Q.1. 8 In conventional spray gun, the needle valve must close _____the air valve close. **(1)**

(a) After (b) Before (c) Simultaneously (d) None of these

Q.2 Attempt ***any Seven*** Questions **(14)**

(a) Write down advantages of brush applications.

(b) Write the functions of 'fluid nozzle' in spray gun.

(c) What is "smut"?

(d) List the advantages of "flow coatings" applications.

(e) Important properties of paints required for dipping application.

(f) How 'direct pull out' test performs for testing of adhesion.

(g) How curtain coating can be applied on metal substrate?

(h) Write about 'Final Rinses" in metal pretreatments.

(i) Draw limits of movements of "robot painter".

Q.3 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.3 b What are different types of paint application? Write in details about dip application. Also different criteria of paint requirement to be used for this application? **(6)**

OR

Q.3 b Give brief account of curtain coatings. Explain in details Vacuum & Pneumatic coaters **(6)**

Q.4 a Give the brief account of Zinc Phosphate, Iron Phosphate and Chromates with chemical reactions as conversion coatings. **(6)**

Q.4 b Why metal cleaning required? Write in details Solvent degreasing, Emulsion cleaners and alkaline cleaners. **(6)**

OR

Q.4 b What are water reducible resins? Give important properties of water with water borne coatings. Write important properties of water reducible resins **(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 Electro coatings with diagram. What is Cationic Electrodepostion? Explain **(6)**

Q.6 b What is smart coating? Give attractive features of smart coatings application. **(6)**

OR

Q.6 b Write broad classes of UV cured coatings. Explain in details about unimolecular and bimolecular photo initiators in free radical UV curing. **(6)**
