

SEAT No. _____

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SARDAR PATEL UNIVERSITY**M.Sc. 2nd Semester (Surface Coating Technology) (CBCS) Examination****Monday, April 16th, 2018****Time: 10:00 am to 01:00 pm****Course No.: PS02CSCT23****Subject: Coating Properties and Analysis of 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 Which of the following is not a rheological parameter? 1
(a) Shear Rate (b) Bingham Bodies (c) Yield Value (d) Flocculation
- Q.1.2 If Hegmann gauge reading is 7+. What is the reading in micron? 1
(a) 12.7 μ (b) 0.5 μ (c) 50.8 μ (d) 25.4 μ
- Q.1.3 Weight per liter, Kg/ltr is highest in _____. 1
(a) S/G Paint (b) Air Drying Enamel (c) Stoving Enamel Black (d) Red Oxide Primer
- Q.1.4 A pull-off adhesion test is done to measure the resistance of a coating to separate from a substrate applying a perpendicular _____. 1
(a) Tensile force (b) Torsional force (c) Gravitational force (d) none of these.
- Q.1.5 What information can be obtained from accelerated UV exposure 1
(a) Gloss and Color Change (b) Chalking resistance (c) Corrosion Resistance (d) a & b
- Q.1.6 Pick the odd one with respect to corrosion resistance test of coatings 1
(a) Salt Spray Test (c) Protection against corrosion
(b) Salt Water immersion (d) Scratch Hardness
- Q.1.7 If viscosity in poise is 3.0 of varnish of specific gravity of 0.93. What is the viscosity in stoke? 1
(a) 2.99 (b) 3.22 (c) 3.65 (d) 3.00
- Q.1.8 _____ is defined as the Color variable that denotes its departures from greyness. 1
(a) Hue (b) Saturation (c) Chroma (d) b and c both
- Q.2 Answer Any Seven of the Following 14**
- a) Write the phenomena of sagging.
- b) Classify the different 'Gloss Values' according to PVC.
- c) Outline the different techniques of film formation.
- d) Define Viscosity. How will you check viscosity by Ford Cup no. B-4?
- e) Name any two methods to determine Elasticity.
- f) Name any two methods to determine Hardness.
- g) A pigmented coating has wet film opacity of 14 sqmtr / Ltr. At 42% non-volatile by volume. What will be its WFT and DFT?

[P.T.O.]

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h) Outline the different techniques of film formation.

i) List the physical and chemical causes for the adhesion of coatings to the substrate.

Q.3 a What are the different types of flow? 6

Q.3 b Classify the Viscometer on accuracy of measurement and suitability for flow system. Discuss in detail about Falling Sphere Viscometer. 6

Or

Q.3 b How will you assess Surface Dry, Hard Dry and Tack free stage of oxidative coating drying? 6

Q.4 a Write a note on Film Thickness. 6

Q.4 b Give the importance of % Volume Solids and describe the three categories of Coatings based on %Volume Solids, explain in detail. 6

Or

Q.4 b Enlist the different techniques of Film formation. Illustrate and explain the phenomena of Coalescence. 6

Q.5 a Write about mechanical theory of adhesion of coating to the substrate. 6

Q.5 b What are the different hardness tests? Explain the Koing-Persoz instrument? 6

Or

Q.5 b Match A with B 6

Common Terms (A)	Alternate Terms (B)
1.Touch Dry	a. Cured for Service
2.Newtonian Flow:	b. Time to recoat
3.Shear thinning:	c. Dry to walk on, hard dry, through dry
4.Full Cure	d. Tack-free, Surface dry
5.Dry to Handle	e. Viscosity <i>decreases</i> with the rate of shear.
6.Non-Newtonian Flow:	f. Viscosity <i>increases</i> with the rate of shear
7.Shear thickening	g. Which does not contain constant viscosity
8.Over coating Interval	h. Which have a constant viscosity

Q.6 a Write a note on QUV accelerated weathering. 6

Q.6 b Give the failure appearance, Cause of Failure and Problem solution of settling and gelling in liquid paint. 6

Or

Q.6 b Write about the following defects: 6

(1) Sagging (2) Prolong drying.

X