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[69] SEAT No._____

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SARDAR PATEL UNIVERSITY

M.Sc. 3rd Semester (Surface Coating Technology) (CBCS) Examination

Friday, , 22nd March 2019

Time: 02:00 pm to 05:00 pm

Course No.: PS03CSCT22

Subject: Technology of Paint Manufacturing

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 At CPVC if adhesion failure is cohesive then _____. (1)

(a) Coating film breaks (b) No change

(c) Interface separation of coating & substrate (d) None of above

Q.1. 2 In latex paint LCPVC _____as the particle size of latex decreases. (1)

(a) Decrease (b) Increases (c) Remain same (d) Doubles

Q.1. 3 To control fire and explosion hazards the installation of _____ must be space in plant design. (1)

(a) Temperature alarm (b) Walk ways (c) First aid kit (d) Silencers

Q.1. 4 'Screen blinding' is trouble for which machinery (1)

(a) Ball Mill (b) TRM (c) Bead mill (d) HSDD

Q.1. 5 In Pyrolysis technique wastes are heated in air free chamber at temperature _____ (1)

(a) 1150 °C (b) 1850 °C (c) 1650 °C (d) 2050 °C

Q.1. 6 Diameter of container (Vessel) should be _____of disc diameter in HSDD (1)

(a) 2.8-4 D (b) 0.2-0.4 D (c) 1.8-2.0 D (d) 0.8-1.8 D

Q.1. 7 As shear rate increased in HSDD which flow pattern develop? (1)

(a) Laminar (b) Smear (c) Smash (d) Turbulent

Q.1. 8 Which is a highly efficient process for producing fine pigment dispersion in ball mill? (1)

(a) Centrifuging (b) Cataracting (c) Cascading (d) Repulsing

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

(a) What is "Solvent Shock"? How it results in to flocculation?

(b) How CPVC of pigment combination can be calculated? Give Equation.

(c) What is Danial WET Point and FLOW Point?

(d) Explain laminar & turbulent flow in HSDD.

(e) What is charge repulsion and entropic repulsion in the stabilization of dispersion?

(f) What is poor "enamel hold out"?

(g) What is "binder index"? Give equation.

(h) Give procedure to operate conventional TRM step by step (Fixed Central Roll)

(i) Discuss different factors regards to plant lay out.

(P.T.O.)

Q.3 a Mill base rheology in HSDD with diagram. Discuss size positioning and speed of disperse blade. (6)

Q.3 b Draw schematic diagram of conventional Ball mill. Explain its working in detail with respect to speed of rotation. Explain its advantages & disadvantages. (6)

OR

Q.3 a Draw schematic diagram of conventional TRM. Explain its working in detail. Give its material balance equations (6)

Q.3 b 1) Advantages and Disadvantages of Bead Mill (6)
2) Advantages and Disadvantages of HSDD

Q.4 a Calculate CPVC of given Pigment Combination. (6)

1. Zinc Oxide	weight 40%	Sp. Gravity 5.60 ,	O.A 17
2. Iron Oxide synthetic	weight 25%	Sp. Gravity 4.80 ,	O.A 22
3.Talcum	weight 10%	Sp. Gravity 2.80 ,	O.A 35

Q.4 b Explain Dynomill and Twin Shaft Disperse (TSD) in details. (6)

OR

Q.4 b What is 'enamel hold out'? Why it is desirable to design primer with PVC greater than CPVC? How Hiding is affected by PVC? (6)

Q.5 a Explain in detail how film properties 'adhesion' 'Gloss' and 'density' changes as PVC reaches to CPVC and above CPVC with graph. (6)

Q.5 b How good, fair, and poor dispersion can be achieved by WET point and FLOW point. (6)

OR

Q.5 b What is charge repulsion and Entropic repulsion? Which one is more important in Aqueous dispersion? Explain in details with effect of layers adsorbed. (6)

Q.6 a Discuss importance of plant location & factors should be considered in choosing plant site (6)

Q.6 b Discuss different factors regards to 'Plant Lay out' (6)

OR

Q.6 b Discuss health and safety regulations in details with chemical Hazards, Fire Hazards and Personnel safety. (6)
