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SARDAR PATEL UNIVERSITY

SEMESTER EXAM (CBCS) (NC), M.Sc. INDUSTRIAL CHEMISTRY

SEMESTER -3, PS03CICH03-CHEMICAL TECHNOLOGY-1

05-04-2016, Tuesday,TIME: 2:30 p.m to 5:30 p.m

Total Marks: 70

Note: Attempt all questions. Draw neat and labeled diagram where ever necessary. Figures on the right show marks.

Q.1. Answer the following MCQs. **(08)**

1. _____ is the function of pigment in surface coating system.

A. Film formation B. Opacity C. Imparting Colour D. Both B & C

2. The average chain length of a fatty acid in oil is indicated by_____.

A. Iodine Value B. Acid value C. Saponification value D. Peroxide value

3. _____ resins are used as curing agents for Hydroxyl functional Polyester resins.

A. Amino B. Alkyd C. Silicone D. None of these

4. Lithopone is a mixture of_____.

A. $ZnSO_4$+$BaSO_4$ B. ZnS + BaS C. ZnS + $BaSO_4$ D. $ZnSO_4$ + BaS.

5. Oxygenated solvents are _____ powerful than hydrocarbon solvents.

A. More B. Less C. Equally D. None of these

6. Organic pigments are _____ than inorganic pigments in colour.

A. Lighter B. Brighter C. Dull D. None of these

7. Wetting additives will reduce _____ between pigments and resin.

A. Friction B. Stress C. Interfacial tension D. Viscosity

8. Methacrylate esters have _____ group substituted at alpha carbon as compare to acrylate esters.

A. Methyl B. Ethyl C. Propyl D. Butyl

Q. 2 Answer the following short questions. **(Any 7)** **(14)**

1. Define surface coating system & explain its functions
2. What is iodine value; explain its correlation with unsaturation in fatty acid chain.
3. What is alkyd resin? Enlist various raw materials for alkyd resin.
4. Enlist different types of polyurethane coating systems.
5. Enlist various white pigments?
6. Differentiate between organic pigments and inorganic pigments.
7. Define diluents and thinners.

8. Define the term oleochemicals and enlist their advantages.
9. Give the classification of pigments.

Q.3 (a) Discuss the following characterization methods for oil:

i. Viscosity ii. Hexabromide value iii. Saponification value **(06)**

Q.3 (b) Explain the technology of oil free saturated polyester resins. **(06)**

OR

Q.3 (b) Define solvent. Classify the solvents highlighting the characteristics of each class. **(06)**

Q.4 (a) Describe the various epoxy based coating systems. **(06)**

Q.4 (b) Write a note on modified phenolic resins. **(06)**

OR

Q.4 (b1) What are acrylic polymers? Write the structures of backbone monomers for acrylic polymers. **(03)**

Q.4 (b2) Discuss the following additives for surface coatings: i. Surface additives ii.Defoamers **(03)**

Q.5 (a) Define pigments and explain various important properties of pigments. **(06)**

Q.5 (b) Explain the production technology of TiO_2 by chloride process. **(06)**

OR

Q.5 (b) Write a note on quality control in pigment. **(06)**

Q.6 (a) Explain in brief chemistry and kinetics of fat splitting. **(06)**

Q.6 (b) Write a short note on fatty alcohol and methyl esters. **(06)**

OR

Q.6 (b1) Write a note on glycerol. **(03)**

Q.6 (b2) Write a note on fatty amines? **(03)**

_____x_____

Best of Luck.