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SARDAR PATEL UNIVERSITY

M.Sc. 1st Semester (Surface Coating Technology) Examination (CBCS)

PS01CSCT02 : Chemistry & Technology of Inorganic Pigments

Saturday, December 1, 2012

Time: 10:30 am to 1:30 pm

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(1) Which extender when used with appropriate pigments gives fire retardant property? (1)
 (A) Calcium Carbonate (B) Pyrogenic Silica
 (C) Barytes (D) Talc
- (2) Pick the odd one with respect to bleed resistance (1)
 (A) Carbon Black (B) Organic Pigments
 (C) Iron Blue (D) Chrome Green
- (3) Composition of Pyrophyllite is _____ (1)
 (A) Magnesium silicate (B) Calcium silicate
 (C) Aluminium silicate (D) Aluminium meta silicate
- (4) Pick the odd one with respect to fume resistance. (1)
 (A) White lead (B) Zinc oxide
 (C) Titanium dioxide (D) Lithopone
- (5) Tripoli is the other name given to _____ (1)
 (A) Crystalline silica (B) Diatomaceous silica
 (C) Fumed silica (D) Amorphous silica
- (6) Which Carbon black pigment has alkaline pH. (1)
 (A) Channel Black (B) Furnace Black
 (C) Thermal black (D) Acetylene Black
- (7) Which of the pigment is non toxic? (1)
 (A) Chrome Green (B) Hydrated Chromium oxide Green
 (C) Lemon Chrome (D) Lead Molybdate
- (8) Which class of pigments is called direct inhibitors? (1)
 (A) Chromates (B) Borates
 (C) Phosphates (D) Molybdates

Q.2 Answer any seven of the following

(14)

- 1 What is color mixing? Explain Additive and Subtractive color mixing?
- 2 Munsell Color Order System.
- 3 TiO_2 pigments require surface treatment- Justify?
- 4 Why Lead driers are avoided in Aluminium Paints- Explain?
- 5 Write in brief about different particle shapes of pigments.
- 6 Chromium oxide green is used in camouflage paints-explain?
- 7 Antimony oxide pigment is used in fire retardant paints- Justify
- 8 Pyrogenic silica gives thixotropic effect to paint system – justify?
- 9 Write a note on Oil Absorption value.

- Q.3(a) Give different methods of color quantification. Explain in detail about CIE color quantification. (6)
- (b) Explain the important characteristics of TiO_2 Pigments. Write on manufacturing of TiO_2 by Chloride Process. (6)

OR

- (b) List various silicate extenders. Explain about Talc and Mica in detail. (6)

- Q.4(a) What is hiding power? How it is measured. Explain the factors affecting hiding power in detail? (6)
- (b) Explain in detail about Carbonate extenders used in Coatings. (6)

OR

- (b) What is leafing characteristic in aluminium pigment? Describe various factors affecting leafing property in detail. (6)

- Q.5(a) Discuss about different characteristic of Carbon black pigments. (6)
- (b) Explain about Iron Blue and Ultramarine blue pigments in detail. (6)

OR

- (b) Write a note on any two of the following (6)
- I. Channel Black pigments
 - II. Synthetic Yellow oxide pigments
 - III. Chromium Oxide Green & Hydrated Chromium Oxide Green pigments

- Q.6(a) Explain about crystallography of Lead Chromate pigments. Give brief account of different Lead Chromate pigments. (6)

- (b) Define and explain about Corrosion? Explain in brief about the different mechanism of protecting the metals from corrosion with the help of Coatings. (6)

OR

- (b) List the different class of active inhibitive anticorrosive pigments. Give detailed account on Chromate Pigments. (6)

