[34] SEAT No._____

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SARDAR PATEL UNIVERSITY

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

Friday, 22nd March 2019

Time: 10:00 am to 01:00 pm

Course No.: PS01CSCT22

Subject: Chemistry & Technology of Inorganic Pigments

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 Mixing of cyan and magenta will give which colour? (1)

(a) Red (b) Black (c) Blue (d) Green

Q.1. 2 What is chemical composition of Talc (1)

(a) Lithium Meta silicate (b) Magnesium Silicate

(c) Sodium Hexa Meta Silicate (d) Potassium silicate

Q.1. 3 Which is somewhat unique extender in view of its density (Highest)? (1)

(a) Natural Silica (b) Talcum (c) Calcium Carbonate (d) Barytes

Q.1. 4 Which carbon black has alkaline pH (1)

(a) Furnace Black (b) Channel black (c) Thermal Black (d) Acetylene Black

Q.1. 5 Antiblocking property of synthetic silica improves _____ properties. (1)

(a) Hiding (b) Sticking (c) Whitening (d) Dispersion

Q.1. 6 Which Pigment/Extender has highest bulking value? (1)

(a) Iron Blue (b) Red iron Oxide (c) Barytes (d) Titanium Dioxide

Q.1. 7 Which of the Pigment is called direct inhibitors? (1)

(a) Chromates (b) Borates (c) Molybdates (d) Phosphates

Q.1. 8 Which of the following undergoes discolorations upon calcination (1)

(a) Ocher (b) Umber (c) Sienna (d) All of these

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

(a) Explain Bulk value of the pigments

(b) What is 'tie coat' recommended on clean steel?

(c) Which are the factors needed for electrochemical reactions to corrosion occur?

(d) Which is known as "BLSC" as anti-corrosive pigment?

(e) Why ultra-marine blue is popular as "Laundry Blue"?

(f) How calcined china clay contributes to hiding?

(g) Why aluminum paints should be supplied in separate container.

(h) Distinguish between the properties of inorganic & organic pigments.

(i) Explain tinting strength of colour pigment.

(P.T.O.)

Q.3 a What is hiding power? How it is measured? Explain about effect of PVC and Particle size on hiding power. (6)

Q.3 b Write about chromium oxide green and chrome iron green. (6)

OR

Q.3 a Write in detail about manufacture of TiO_2 by Chloride process. How it is advantageous Compare to sulphate process. (6)

Q.3 b Write about primrose chrome and scarlet chrome pigments (6)

Q.4 a Explain in brief about Calcium carbonate and Precipitated Calcium carbonate. Also write in details Barytes and Blancfixe. (6)

Q.4 b Write about Bronze Powders and Zinc Dust as metallic pigments. (6)

OR

Q.4 a Enlist different silicate extenders. Give their composition. Explain in brief about Talc, Asbestos, Kaolin and calcined kaolin. (6)

Q.4 b Explain in details about Thermal Black, Furnace Black and Lamp Black (6)

Q.5 a Write a note on aluminum based metallic pigment. Explain the method of assessing Leafing property of aluminum pigment. (6)

Q.5 b Write about white Chromates and Leads and Phosphites as Anticorrosive Pigments (6)

OR

Q.5 a Write about Pearlescent and phosphorescent pigments in details. (6)

Q.5 b Enlist different mechanism for protecting the metal from corrosion by using coatings. Write in detail oxidative passivation, Cathodic & anodic passivation (6)

Q.6 a Explain solvent based and water based coatings. Discuss putty, Primer and top coat with respect to P.V.C. (6)

Q.6 b Write about munsell and pantone colour order system. (6)

OR

Q.6 b List the method of colour quantification. Explain CIE system in details. (6)