

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019****Subject Code: 2173613****Date: 23/11/2019****Subject Name: Specialty Pigments & Recent development in Pigment Technology****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Give the list factors in which the metallic appearance is depends. How do you calculate the flop index?	03
	(b) Discuss the structure of TiO ₂ -Mica pigment with the four existing interfaces.	04
	(c) Explain the model used for flake orientation with diagrammatical representation. Discuss the optical properties of absorption and metal effect pigment.	07
Q.2	(a) Discuss about chemical release coating with respect to antifouling coating.	03
	(b) What is fouling? Discuss the two main types of underwater antifouling coatings.	04
	(c) Explain the pigment such as cuprous oxide, Copper pigments, and mercuric oxide based system used in antifouling coating.	07
	OR	
	(c) Explain the behavior of a biocide based antifouling system with suitable schematic illustration.	07
Q.3	(a) Explain the following terms:	03
	(i) Quantum well (ii) Quantum wire (iii) Quantum wire	
	(b) Discuss the properties of Nano Materials.	04
	(c) Explain the synthesis of silver nano particles by using following reducing agents like sodium citrate, ascorbate, and sodium borohydride.	07
	OR	
Q.3	(a) What are the variables controlling Pearl Effect?	03
	(b) Explain the applications of Pearlescent Pigments?	04
	(c) Explain the concept of Luminescence, Fluorescence and Phosphorescence with the help of Jablonski Diagram?	07
Q.4	(a) What do you mean by Metal Flop?	03
	(b) What are the properties of Luminescent pigments?	04
	(c) Give the classification scheme of effect pigments on the basis of opacity or optical impression?	07
	OR	
Q.4	(a) What is Flip Flop Effect? Explain with suitable example.	03
	(b) What are the applications of Luminescent pigments?	04
	(c) Establish the difference between: Leafing & Non leafing Aluminum pigments with suitable diagram	07
Q.5	(a) What is Corrosion? Explain with suitable schematic mechanism.	03
	(b) Discuss the following anticorrosive pigments: (i) Chromates (ii) Molybdates	04

- (c) Explain the mechanism of corrosion resistance by barrier pigments with proper schematic diagram. **07**

OR

- Q.5** (a) What are thermo chromic pigments? **03**
(b) What are anti-corrosive pigments? What are the types of anti-corrosive pigments? **04**
(c) Give the mechanism of passivation of Iron by chromate pigments? **07**

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