

Bachelor of Printing Engineering Examination, 2025
(2nd Year- 2nd Semester)
Ink Technology

Time: Three hours

Full Marks: 100

Group – I

Answer the following questions. (40)

- (1) (a) Differentiate between: (i) Pigment and Dye stuff (ii) Liquid ink and Paste ink. 2 X 4
 (b) 'Incorrect use of surfactants can result in decreased adhesion to some substrates' –Justify. 4
 (c) Write difference between drying time and setting time? 4
 (d) What happen if the wax is too soluble in the ink? 2
 (e) Which form of titanium dioxide is preferred for gravure inks and why? 2
- (2) (a) 'Thixotropy is a time dependent phenomenon' – Justify. 5
 Or
 Why plasticizer is used in ink? How plasticizer works? Give one example of plasticizer. 5
 (b) Why process color printing mostly uses organic pigments? 4
 (c) Write down the uses of chelating agent. Why water based systems use these materials? 4
 (d) How pigment flocculation can be prevented? 2
 (e) 'The use of lead in driers is being phased out' – Why ? 2
 (f) Which kind of additive is used to promote dispersion of pigment? Explain with an example. 3

Group – II

Answer question no. 3 and any one from the rest. (20)

- (3) (a) What is short and long oil alkyd? How it can be derived? Write down the use of medium-oil alkyds. 5
 (b) Write down the advantages of horizontal bead mill over vertical bead mill. 5
- (4) (a) Why moisture and volatile content of pigment is tested at 105⁰temperature? 1
 (b) Write down the working procedure of Z-arm mixers. Which ink manufacturing process employ these mixers? 3
 (c) Describe the pigment chips manufacturing process with proper diagram. Why are they mostly used for preparing liquid inks for packaging? 5
 (d) What should be done if opacity is required in a transparent ink? 1
- (5) (a) What happen if rosin is heated with an oil reactive pure phenolic resin at 150⁰C? 4
 (b) Write down the advantages of horizontal bead mill over vertical bead mill. 3
 (c) What happen if the yield value of ink is higher than the shear stress in the duct? 3

[Turn over

Group - III

Answer question no.8 and any one from the rest.(20)

- (6) (a) What are the limitations of IGT printability tester? Explain the working of the equipment which is adopted to overcome those limitations. 5
 (b) Write down the causes of poor adhesion of dried ink films on substrate. 5
 (c) How dispersion of ink can be tested? 4
 (d) Why Xenon arc is used as a light source for lightfastness test of pigment? 1
- (7) (a) Which property of printing ink is affected by high surface area to volume ratio of carbon black pigment? How does it affect ink manufacturing? 4
 (b) What is ink tack? Write down its importance in printing ink. How does the tack measured? 5
 (c) What is radiation induced drying? Describe any one process briefly. 5
 (d) Why lithographic inks must be highly pigmented than other inks? 1
- (8) What are the causes and effects of streaking problem in gravure printing? 5

Group - IV

Answer the following questions.(20)

- (9) (a) What happen when first down ink has the lowest tack than the succeeding colors in multicolour printing? Explain briefly. 3
 (b) What happen if the index of refraction of pigment and varnish are widely different? 2
- (10) What is tinting? Write down the causes and remedies of tinting. 5
- (11) What is ink misting? What are the factors that affect ink misting? 5
- (12) What is set-off? Write down the factors which influences set-off? 5