

Bachelor of Printing Engineering Examination, 2024
(2nd Year- 2nd Semester)
Ink Technology

Time: Three hours

Full Marks: 100

Group - I

Answer question no. 1 and any one from the rest. (50)

- (1) (a) What are the factors based on which the visual characteristics of the inks are defined? Explain any one factor briefly. 4
- (b) Differentiate between liquid ink and paste ink. 4
- (c) 'Solvent choice is important in controlling gloss of printing ink' –How? 4
- (d) What are the functions of printing ink? Explain each one. 4
- (e) 'Waxes tend to reduce gloss of printing ink' - How? 2
- (f) Differentiate between heatset inks and quickset inks. 4
- (g) Differentiate between UV and IR drying. 4
- (h) Which raw material determines the adhesive nature of printing ink? What are the other factors which control the adhesion of ink on absorbent and non-absorbent substrates? 4

- (2) (a) Write down the advantages and disadvantages of channel black. 4
- (b) Which kind of additive is used to promote dispersion of pigment? Explain with an example. 3
- (c) What happens when first down ink has the lowest tack than the succeeding colors in multicolour printing? Explain briefly. 4
- (d) 'Thixotropy is a time dependent phenomenon' – Justify. 5
- (e) Why the use of lead in driers is being phased out? 1
- (f) Write short notes on screen inks. 3

- (3) (a) Why does process color printing mostly use organic pigments? 5
- (b) What is pigment flocculation? How can it be prevented? 4
- (c) Write down the uses of chelating agent. Why water based systems use these materials? 4
- (d) 'Incorrect use of surfactants can result in decreased adhesion to some substrates' –Justify. 4
- (e) What happens if the index of refraction of pigment and varnish are widely different? 3

Group - II

Answer any three questions. (15)

- (4) Describe the pigment chips manufacturing process with proper diagram. Why are they mostly used for preparing liquid inks for packaging? 5
- (5) Write down the advantages of horizontal bead mill over vertical bead mill. 5
- (6) What is short and long oil alkyd? How can it be derived? Write down the use of medium-oil alkyds. 5
- (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) Why moisture and volatile content of pigment is tested at 105^o temperature? 1

[Turn over

Group - III

Answer the following questions. (20)

- | | |
|--|---|
| (8) What happen if rosin is heated with an oil reactive pure phenolic resin at 150 ⁰ C? | 5 |
| (9) What is ink tack? Write down its importance in printing ink. How the tack is measured? | 5 |
| (10) Write difference between drying time and setting time? | 5 |
| (11) (a) Why Xenon arc is used as a light source for lightfastness test of pigment? | 1 |
| (b) How degree of dispersion in ink can be measured? | 4 |

Group - IV

Answer the following questions. (15)

- | | |
|---|---|
| (12) What are the causes and effects of streaking problem in gravure printing? | 5 |
| (13) What is scumming in offset printing? Write down the causes and remedies of scumming. | 5 |
| (14) What is set-off? Write down the factors which influences set-off? | 5 |