

AMPT22 PRINTING INK TECHNOLOGY

UNIT-1 RAW MATERIALS

- 1.1 Colorants – Classification, preparation and properties;
- 1.2 Inorganic – white and coloured, carbon black, metallic, ultramarine and fluorescent;
- 1.3 Organic - Diarylide yellow, Hansa yellow, Rhodamine, Lithol, Rubine;
- 1.4 Dyestuffs and oils- Types, Preparation, Properties and uses;
- 1.5 Varnishes-types, applications; Solvents - General properties;
- 1.6 Solvents like Hydrocarbon, alcohols, glycols, ketones, esters and their properties; Resins- Natural Rosin and its derivatives and Gumarabic;
- 1.7 Synthetic – Rosin modified fumaric, maleic and phenolic, alkyds, hydro carbons, polyamides,
- 1.8 Polyvinyl, Epoxy resins, Acrylic resins, Ethyl Cellulose and Nitrocellulose;
- 1.9 Additives– Properties and applications Driers, Waxes, Antioxidants, plasticizers, wetting agents, defoaming agents and Antiskinning agents.

UNIT-2 PRINTING INKS FOR DIFFERENT PROCESSES

- 2.1 Offset Inks- Pigments, Resins, Vehicles, Plasticizers, Additives, Ink dispersion,
- 2.2 Ink rheology and variables; Inks for sheet and web- Book printing, package printing, publication printing;
- 2.3 Flexography Inks- colorants, pigments and dyes, selection criteria, Ink vehicle and its properties, resin types and selection criteria,
- 2.4 Additives, Ink rheology, Inks for paper, plastics and foil; Gravure Inks – colorants,
- 2.5 Vehicles, solvents, Ink additives, Publication gravure inks, Packaging and product inks, rheology;
- 2.6 Screen inks- Constituents, Properties, Inks for paperboard, plastic containers, textile inks, impervious substrates and metallic substrates; Manufacturing methods
- 2.7 Paste inks, Liquid inks, premixing, Flowchart - Ball mill, Bead mill and Triple roll mill.

UNIT-3 INK TEST AND MEASUREMENTS

- 3.1 Viscosity, Tack, Colour, Gloss, Rub resistance, Length,
- 3.2 Drying Characteristic, and Fineness of grind gauge, light fastness,
- 3.3 Effect of temperature and humidity;
- 3.4 Standards on environmental concerns, end use applications,
- 3.5 Ink problems related to printing processes – Trouble shooting.

UNIT-4 SPECIALITY INKS AND INK DRYING MECHANISMS

- 4.1 Water based inks; Inkjet printing inks; Radiation curable inks-IR, UV & EB–Raw materials, equipment used for drying;
- 4.2 Security inks- Thermochromic and Photochromic; Nanoinks; Ink drying mechanisms.

UNIT-5 COATINGS

- 5.1 Coating types - Oil based, water based, UV and EB coatings and nano emulsions,
- 5.2 Roller coatings and Hybrid coatings - constituents, properties.

Reference Books:

1. Cliffwoof, A Manual for Flexographic Inks, Fishbum Printing Ink Co.Ltd., Watford, 1979.
2. Charles Finley, Printing Paper and Ink, Delmar Publishers, 1997.
3. Nelson R.Eldred, What the Printer should Know about inks, 3rd Edition GATF Press,2001.
4. Bob Thompson, Printing materials Science and Technology, 2nd edition, 2004.

