

2.7 31527 PRINTING SCIENCE

UNIT-1 MATERIALS USED FOR IMAGE CARRIERS

- 1.1 Relief Process: Type metal alloys. Original plates: Zinc and copper for blocks; photopolymer plates, Duplicate plates: stereo and electro.
- 1.2 Planography: Zinc, aluminium, anodized aluminium, bimetallic and trimetallic plates, presentsitised plates, photopolymer plates, paper based plates.
- 1.3 Intaglio: Metals used for gravure cylinders and plating.
- 1.4 Materials used for other processes. E.g. Flexography, Screen, Dry offset.

UNIT-2 PHOTOGRAPHIC MATERIALS

- 2.1 Basic ingredients of emulsion and their functions.
- 2.2 Emulsion process, control of sensitometric qualities and sensitometric properties, emulsion structure.
- 2.3 Developer's constituents and their functions.
- 2.4 Chemicals for after treatment.
- 2.5 Introduction to non-silver material.

UNIT-3 POLYMERS

- 3.1 Monomers and Polymers.
- 3.2 Homo polymers and Copolymers.
- 3.3 Types of polymerization reactions: Addition polymerization and condensation polymerizations.
- 3.4 Types of Polymers: Plastics, rubber and Fibres.
- 3.5 Composition and characteristic properties of the polymers: Printing ink resin and vehicles, adhesives, film base, cellulose and gelatin.

UNIT-4 COLLOIDS

- 4.1 Characteristics.
- 4.2 Methods of preparation and properties.
- 4.3 Application in printing industry.

UNIT-5 SUBSTRATES

- 5.1 Fibrous and non-fibrous raw materials used in paper and board manufacture.
- 5.2 Surface treatment related to ultimate use.
- 5.3 Varieties of papers and boards: Characteristics, classification, identification selection of choice for different classes of print jobs and printing processes.
- 5.4 Dimensional stability of paper: Effect of humidity on paper.
- 5.5 Other substrates: Metal foil, plastic, cellophane, etc.

UNIT-6 PRINTING INKS

- 6.1 Constituents of printing ink, general characteristics and requirements of printing inks for various printing processes.

- 6.2 Basic drying methods and their suitability for printing processes.
- 6.3 Three and four colour process inks for letterpress and lithography.
- 6.4 Different inks, e.g. heat set, quick set inks, fugitive, metallic inks, etc., their suitability to different applications.
- 6.5 Flexo and Gravure inks.

UNIT-7 DIGITAL PRINTING SCIENCE:

- 7.1 Digital Ink – Powder Type, Solvent Type
- 7.2 Substrates used for digital printing

UNIT-8 TESTING OF MATERIALS

References Books:

1. Printing inks and papers, C.S. Misra, Anupam Prakashan, Allahabad.
2. Mudran Syahiyan Tatha Kagaj, C.S. Misra, Anupam Prakashan, Allahabad.

