

**Detailed Syllabus for the Post of COMPUTER GRADE II**  
**(Printing ) - Direct Recruitment**

**(Cat.No: 718/2022)**

**Module I**

**Costing and Estimation (20 marks)**

Difference between costing and estimating. Types of cost. components of cost. Estimation of paper- selection of paper, allowance for wastage, allowance for trimming, weight of loose sheets, weight of reel of paper. Estimation of ink- Ink consumption formula, ink allowance for spoilage. Estimating of binding material-board requirement, estimating of covering materials, estimating of sewing thread, estimating of stitching wire, Estimating of adhesives.

**Module 2**

**Planning for print production & Printing press management (5 marks)**

Planning Consideration- Materials purchasing and inventory control, Material Management, Production Scheduling, Production Control, Quality Control. Press layouts- prepress, press and post press. Roles and Responsibilities of various departments, Structure of large -scale printing organization, roles and responsibilities of various departments i.e. sales, finance, personnel, materials - procuring and stores, dispatch, safety, printing.

**Module 3**

**Raw materials & their properties (10 marks)**

Raw materials for paper. Paper making process. Paper finishing-. Different types of paper and their uses. Paper properties - Optical, Structural and Mechanical properties. Printability properties and Runnability properties.

Ink - Components of ink - Ink properties - Optical, Structural and drying properties. Printability properties and Runnability properties. Ink drying methods- Oxidation, evaporation, penetration, Precipitation, radiation curing. Ink manufacturing steps. Types of printing inks

**Module 4**

**Images and Graphics (5 marks)**

Types of images - line images, continuous images, half tone images. Highlight area, middle tone area, shadow area. Color images, monochrome images. Vector and Bitmap images. Differentiate raster and vector.

Resolution and Quality: Pixel, PPI, DPI, LPI, screen angle, screen angle direction, Halftone dot shapes. Moiré effect. Color shift. Different dot shapes and their use. Relation between dot shapes and LPI/resolution.

**Module 5**

**Prepress operations & Color (10 marks)**

Typesetting, copy editing, graphic creation, proofing, proofreading, page layout preparation, imposition, screening & color separation. Imposition introduction.

Factors affecting imposition. Imposition Schemes. sheet wise work, half sheet work, work and turn, work and tumble. Proofing methods.

Wavelength of colours. Color perception, subjective color perception, factors effecting color perception. Color theories – additive, subtractive. Application of color theories in print production.

## **Module 6**

### **Print Design & Digital printing (10 marks)**

Principles of design. Design elements. Typography. Measurements used in typography. Parts of letter or Type. Fonts – family, type size (point). Leading. Kerning. Relation of x-height and leading. Legibility and readability.

Different types of prepress software: - Typesetting software. Image editing software – Pixel based image editing software, Vector graphics editing software, Page Layout Preparation software.

Digital printing methods- Inkjet & Laser printing methods.

## **Module 7**

### **Offset printing Process (20 marks)**

Ink water balance. Masters for offset printing. Sheet-fed offset - Feeding unit: Types of Feeders, Pile board. Stoppers, Types of suckers. Feed board assemblies. Registration unit: Front lay. Side lay – push type, pull type. Sheet detectors – no-sheet detector, multi sheet detectors, cross sheet detectors.

Sheet insertion system. Printing Unit: Construction and parts of Plate cylinder, Blanket cylinder. Construction and parts of Impression cylinder. Bearer contact and bearer clearance printing unit. Inking system – types, construction and features. (pyramid, multi roller)

Dampening system – types, construction and features. Contact and noncontact dampening system.

Web offset -- feeding unit, web control unit, printing unit, drying unit, delivery unit. Feeding unit – reel stand and its types. Web Splicer - Zero speed splicer, Flying splicer. Web Control – Dancer Roller, Metering Roller, Box Tilt, Web break detectors, Bustle Wheel Drying unit – Types of Dryers Chill Rollers. Delivery unit: Folders – Former folder, Double Former Folder, Jaw Folder, Chopper Folder, Combination Folder and Ribbon Folder. Auxiliary Equipment – Stackers, Bundlers, Sheeters, Perforators and Imprinters.

## **Module 8**

### **Flexo, Gravure & Screen-printing Techniques. (5 marks)**

Principles of Flexography Printing Process: Applications. Main Sections of Flexo Printing Machine: Unwind section, Printing section – Inking Unit, Plate cylinder, Impression Cylinder, Drying section and Rewind section.

Principles of Gravure Printing Process: Applications. Main Sections of Gravure

Printing Machine: Unwind section, Printing section – Ink duct, Printing Cylinder, Doctor blade, Impression roller, Drying section and Rewind section.

Introduction to Screen printing - Screen printing materials- Screen, Frame, Squeegee, Stencil.

Screen printing substrates, Screen printing inks.

## **Module 9**

### **Quality & process control targets / patches (5 marks)**

GATF/Printing Industries Plate Control Target. UGRA/FOGRA media wedge. UGRA plate control target film. UGRA/FOGRA process control elements in patches – (information panel, type patch, resolution panel, line panels, doubling/Slur patches, fine dot patches, continuous tone wedge, halftone wedge, visual reference steps, color control patches, register patch).

UGRA/FOGRA Digital plate control wedge. UGRA/FOGRA digital print scale.

Acts related to Printing Industry: Factory Act & printing Act - health safety & welfare provision Press Registration - Copy Right Act - ISO standards- ISO 12647, ISO 12647-2, ISO 2846-2, ISO 9001.

## **Module 10**

### **Print Finishing (10 marks)**

Classification of binding - Loose Leaf Binding – Spiral Binding, Comb Binding. Perfect Binding – introduction. Case binding, End Paper – Types and its use. Styles of binding-Quarter bound book, Half bound book – old style and new style, Full bound book. Stitching, Sewing - Types of Sewing.

Forwarding Operations Cutting, Trimming. Folding – Types of Folding – Folding-topaper, Folding-to-Print, Lump Folding. Creasing, Gathering, Collating, Binder's/Collating mark, Inserting, Perforating, Punching and Drilling, Eyeleting, Index cutting, Numbering. Die cutting and Slitting Operations. Headbands, Edge Decoration, Print Finishing Operations – Embossing & Debossing, Blind Embossing, Gold Blocking /Foil Stamping, Lettering, Laminating, varnishing

**NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper**

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