

**SYLLABUS FOR THE POST OF SCIENTIFIC OFFICER  
PHOTOGRAPHY SECTION  
FORENSIC SCIENCE LABORATORY-POLICE DEPARTMENT**

**I. FUNDAMENTALS OF PHOTOGRAPHY**

- a. Basic properties of Light: Electromagnetic spectrum, Absorption, Reflection, Refraction, Transmission. Quality of light, Attributes of light – Quantity – foot candles – Quality - Colour quality – Colour Temperature – Colour temperature of various light sources Nature of light.
- b. Optics: Lens elements - Image formation with a simple positive lens – Real Image formation, Virtual Image formation. Capture of Image, – Simple lens – Focal length of a lens – Depth of field – Factors responsible for depth of field — Normal lens – Wide angle lens — Fish eye lens, Focal length, 'F' numbers, Magnification, Aberrations and corrections .
- c. Basics of digital imaging - Sensors – Pixels – Resolution – DPI - Digital cameras – Essential features of a digital camera – Image storing devices. Shutters.
- d. Exposure: Photographic exposure – The importance of correct exposure.
- e. Pictorial Composition: Elements , Formats, Balance. The purpose of Composition – Good and bad composition – Elements of composition - Balance in composition – Vertical composition – Horizontal composition – Golden Rule of 2/3rds.

**II. INTRODUCTION TO DIGITAL IMAGING.**

- a. Compare film with Digital—CCD Sensors, CMOS sensors DTP, JPEG, MPEG, Digital colour, Colour Scanner, View finder, Play mode, Record mode. Exposure Lighting- Sensor, Digitizing images, Pixel, Scan lines, Formats, Streaming . Files, Formats & size. Interlace & Progressive Scan.
- b. Camera Controls: Focusing & response time, , Flash, Speed VS Quality, Downloading pictures, - Exposure, Composition, Camera setting, Instant review, Colouring B/W Prints.
- c. Storage & Filing: In camera storage, card readers, Long term storage, Filming Methods, Image databases.

**III. COMPONENTS OF VISUAL DESIGN.**

- a. COLOUR PHENOMENON: Introduction- The Art of seeing things, – Monocular, Binocular, Peripheral vision, Rods & Cones, Color perception.
- b. BASIC RULES OF COMPOSITION: The Golden mean, the rule of thirds, factors for good composition.
- c. FILMING TECHNIQUES :Flow, Time Continuity, Space Continuity Filming Types – Master Scene Technique, Triple Take Technique.

**IV. MOTION PICTURE PHOTOGRAPHY & VIDEOGRAPHY**

- a. PRINCIPLES OF CINEMATOGRAPHY: Introduction, Scope of Cinematography, Sections, Concepts, Illusion of Motion.
- b. Introduction to video system: Television systems , Channels, Cable television, C.C.T.V & Satellite communication. Image formation- Picture elements, Horizontal & vertical scanning, Interlace scanning Frame & field frequency. Horizontal & vertical scanning frequency.

## **V. LIGHTING TECHNIQUES**

- a. Introduction to light: Basic requirements of the lighting to produce the Correct exposed Images.
- b. Professional Lighting Equipments: Light position & Function. Key, Fill, Kicker, BG lights, Light types, Umbrellas, Soft boxes, HMI sources. CFL sources, Types of Lamps: Arc lights, Tungsten Halogen lamps, CFL lamps, HMI lamps, LED lamps.
- c. Visual effect of Natural light: Color quality, Light Dispersion, Color Temperature, the Direction of light, - Natural & Studio lighting, Frontal, Side, Back, Top, Aims of Lighting- Good lighting, & Bad lighting, Horizontal position of light source, Vertical position of light, Combination of Horizontal & Vertical.