

## **MECHANICAL ENGINEERING**

**(DIPLOMA STANDARD)**

**CODE NO: 255**

### **UNIT I: INDUSTRIAL MANAGEMENT:**

X and Y theories of Management, Contributions of Henry Fayol and F.W. Taylor for Management - job evaluation by Ranking method and factor comparison method - motivating techniques - fixing selling price of a product - break even analysis for make or buy decision - sinking fund method and straight line method of calculating depreciation - ABC analysis – determination of economic order quantity – TQM – ISO standards - certification

### **UNIT II: INDUSTRIAL ENGINEERING:**

Factors influencing plant location - principles of layout - techniques used to improve layout - primary and secondary causes of an accident - personal protective devices - method study procedure - flow diagram, string diagram and two handed process chart - principles of motion economy-procedure for conducting stopwatch time study, production study and ratio delay study - objectives of preplanning, routing, scheduling, despatching and controlling - difference between inspection and quality control - types of plant maintenance - TPM

### **UNIT III: PRODUCTION TECHNOLOGY:**

Foundry - patterns - special casting techniques - welding - hot and cold working - drawing, rolling and forging - powder metallurgy - plastics - rubber - ceramics - refractories - lathe work - planer - shaper - slotter - drilling machine - milling machines - grinding machines - broaching - boring and jig boring - - Gears manufacturing practice - Heat treatment and metal finishing - press work

### **UNIT IV: ELECTRICAL AND ELECTRONICS ENGINEERING:**

Units, Ohm's law, Kirchoff's law, Faraday's law - D.C. Circuits, batteries - electro magnetism - single phase and three phase A.C. circuits - Induction motors – Electronics – diodes – resistors – capacitors – transistors – logic gates.

## **UNIT V: MECHANICS OF MATERIALS:**

Mechanical properties of metals - simple stresses and strains – modulus of elasticity - geometrical properties of sections - thin cylinders bending moment and shear force - theory of simple bending - torsion and springs - transmission of motion – gear drives and belt drives.

## **UNIT VI: HEAT POWER ENGINEERING:**

Working principle and comparison of otto and diesel cycles - construction and working of two stroke and four stroke engines - Heat balance test on I.C. engine - working principle of single and multistage compressors - Comparison of reciprocating and rotary compressors - classification of steam boilers - construction and working of steam turbines - working principle of steam power plant - Main elements of a nuclear power plant - Vapour compression cycle - factors affecting human comfort - working principle of a window air conditioner and central air conditioning system.

## **UNIT VII: COMPUTER APPLICATIONS:**

Working principle and constructional details of computer - classification of computer – Input / Output devices - flow charting – MS Office & Star Office – creating documents – presentations – sending emails.

## **UNIT VIII: FLUID MECHANICS AND MACHINERY:**

Working of differential manometer - use of venturimeter and orifice classification of mouth pieces meter - working of pelton wheel, francis turbine and kaplan turbine - construction and working principle of reciprocating pump, centrifugal pump and gear pump - quick return mechanism of shaping machine - table movement in a milling machine.

## **UNIT IX: COMPUTER INTEGRATED MANUFACTURING:**

CAD – Definition – geometric modeling – wireframe, surface and solid modeling – graphic standards – GKS, IGES, PHIGS and DXF. CAM – definition – group technology – part families – parts classification and coding – CAPP – types. CNC – definition – components of CNC – ATC – CNC EDM. Part program – format – coordinate system – types of motion control – types of interpolation – G and M codes – sub program – canned cycles.

**UNIT X: DESIGN OF MACHINE ELEMENTS:**

Factors affecting selection of material – classification of bearings – sliding contact and rolling contact bearings – radial and thrust bearings – limits – fits – tolerance – classification of fits – cams and followers – types.