Paper-I

MECHANICAL ENGINEERING

(Diploma Standard)

CODE NO:202

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 - planner - 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 ENGINEEERING

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 – resisitors – 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 mouthpieces 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–CNCEDM. Part program–format–coordinate system – types of motion control – types of interpolation – G and M codes – subprogram – 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.