

Statics : Simple application of equilibrium equations.

Dynamites : Simple application of equations of motion work energy and power.

Theory of machines : Simple examples of kinematics chains and their inventions, different types of gears, bearing, governors flywheels and their functions. Static and dynamic balancing of grid rotors. Simple vibrations analysis of bars and shafts.

Mechanics of solids : Stress, strain and Hook's law, shear and bending moments in beams, simple bending and torsion of beams spring and thin walled cylinders, elementary concepts of elastic stability, mechanical properties and material testing.

Manufacturing science : Mechanics of metal cutting, tool life, economics of machining, cutting tool materials, basic types of machine tool and their process, Automatic machine tools, transfer lines, Metal forming processes and machines shearing drawing, spinning forming, extrusion. Types of causing and welding methods. Powder metallurgy and processing of plastics.

Manufacturing management : Methods and time study, motion economy and work space design, operation and flow process charts, cost estimation break-even analysis. Location and layout of plants, material handing capital budgeting. Job shop and mass production, scheduling, dispatching, routing inventory.

Thermodynamics : Basic concepts, definition and laws, heat, work and temperature. Zeroth law, temperature scales, behavior of pure substances, equation of state, first law and its corollaries, second law and its corollaries, analysis of air standard powder cycles, carnot, otto, diesel, brayton cycles, vapour power cycles, Rankine reheat and regenerative cycles. Refrigerat cycles Rankine reheat and regenerative cyclee, Refrigerattion cycles Ben coleman, vapour absorption and Vapour compression cycles analysis. Open and closed cycle gas turbine with intercooling, reheating energy conversion.

Flow of steam through nozzles, critical pressure ratio, shock formation and its effect, steam generators, mountings and accessories. Impulse and reaction turbines, elements and layout of thermal power plants. Hydraulic turbines and pumps, specific speed, layout of hydraulic power plants. Introduction to nuclear reactors and power plants handling of nuclear waste.

Refrigeration and Air conditioning : Refrigeration equipment and operation and maintenance refrigerants, principles of air conditioning, psychrometric chart, comfort zones, humidification and dehumidification.
