



JAIN
DEEMED-TO-BE UNIVERSITY

FACULTY OF
ENGINEERING
AND TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

Syllabus for PG JET – 2020

ENERGY & ENVIRONMENTAL MANAGEMENT

➤ **Basic and Applied Thermodynamics**

Basic concepts, Heat and work. Zeroth, First, Second and Third Law – assertions and applications. Real and Ideal gases. Standard vapor, Gas power and Refrigeration cycles, psychometric.

➤ **Heat Transfer**

Modes of heat transfer. Heat dissipation from extended surfaces, Heat exchangers, free and forced Convection, Black body and basic concepts in Radiation.

➤ **Fluid Mechanics and Fluid Machinery**

Basic Concepts, Pressure and its measurement, forces on immersed surfaces, Buoyancy, stability of floating bodies, Kinematics and Dynamics. Applications of Bernoulli's equation, Dimensional analysis, Similitude and modeling.

➤ **Electrical Engineering**

Ohm's law – Kirchhoff's law – A.C. circuits – D.C. machines – Transformers – Synchronous machines – Instrumentation.

➤ **Theory of Machines**

Kinematic and dynamic analysis of planer mechanisms, Cams, Gears and gear trains, Flywheels, Governors. Balancing of rigid rotors, linear vibration analysis of mechanical systems, Critical speeds and whirling of shafts.

➤ **Machine Design**

Design of Joints, couplings, clutches, belt drives, power screws. Design of Power transmission systems: gears and gear drives shaft and axle.

➤ **Strength of Materials**

Stress and strain, bending moment and shear force diagram, bending stresses and deflection of Beams. Torsion of shafts, helical springs. Combined stresses, thick-and thin-walled pressure vessels.

➤ **Engineering Materials**

Basic concepts on structure of solids. Crystalline materials, Binary phase diagrams. Structure and properties of common engineering materials. Heat treatment of steels. Plastics, Ceramics and composite materials.

➤ **Production Engineering**

Metal Forming, Metal Casting, Fabrication Processes, Metal Cutting, Cutting Tools Materials.