



Syllabus for Written Examination

Post: **Assistant Professor/Lecturer**

Subject: **Mechanical Engineering**

1. **Thermodynamics:** First law, second law of thermodynamics, different cycles such as: carnot cycle, otto cycle, diesel cycle, basics of boiler, compressor, heating ventilation and air conditioning systems.
2. **Manufacturing process:** Manufacturing properties of materials, material removal process, digital manufacturing, NC and CNC programming, material joining process, CAD
3. **Material science:** Material selection process, properties of materials, heat treatment process, iron-carbon diagram, environmental effect, emerging materials
4. **Machine design:** Mechanical design process, new product design, modeling and simulation, CAE, optimization techniques, risk and reliability of design, designs of basic components such as shaft, bearing, pulley, spring, brake etc, system design
5. **Heat transfer:** Fundamentals of heat transfer, conduction convection and radiation and its applications
6. **Fluid mechanics:** Basic static and dynamic laws, turbine, pumps and hydraulic machines
7. **Theory of machines and mechanism:** Force analysis, stress, strain and torsion, basics of balancing and vibration
8. **Automobile engineering:** Basic components of automobile, combustion engines, power transmission, suspensions systems, chassis, electrical systems, electric vehicle, alternative fuel vehicles, national and international emission and safety standards
9. **Renewable energy:** Wind energy, solar energy, biomass, etc.