

A.P.P.S.C. Government Polytechnic College Lecturer Posts

Automobile Engineering Syllabus

Paper I: General Studies and Mental Ability

- Major Current Events and Issues of International, National, and State of Andhra Pradesh.
- General Science and its applications to the day to day life Contemporary developments in Science & Technology and Information Technology.
- History of India – emphasis will be on a broad general understanding of the subject in its social, economic, cultural, and political aspects with a focus on AP and the Indian National Movement.
- Geography of India with a focus on Andhra Pradesh.
- Indian polity and Governance: constitutional issues, public policy, reforms and eGovernance initiatives.
- Indian Economy and Planning
- Sustainable Development and Environmental Protection
- **Disaster management:** vulnerability profile, prevention, and mitigation strategies, Application of Remote Sensing and GIS in the Assessment of Disaster
- Logical reasoning, analytical ability, and logical interpretation.
- **Data Analysis:** Tabulation of data Visual representation of data Basic data analysis (Summary Statistics such as mean, median, mode, and variance) and Interpretation.

Paper II: Automobile Engineering

1. Thermodynamics:

systems – Zeroth Law of thermodynamics – First law of thermodynamics – Second Law of thermodynamics – Entropy – Statistical thermodynamics – Air Compressors I.C. Engines cycles and Process – Combustion in I.C. Engines – Engine performance – Scavenging and supercharging of Engines – Modern development in I.C. Engines – I.C. Engine plant layout.

2. Heat Transfer:

Conduction Convection – Thermal Radiation – Heat Exchangers.

3. Fluid Mechanics and Machinery:

Fluid properties – Dimensional analysis – Fluid static's Flow past immersed bodies – Centrifugal pumps – Axial flow pumps – Rotary pumps – Reciprocating pumps – Oil Hydraulic systems.

4. Instrumentation:

Transducers – Flow measuring transducers – Temperature measurement – Strain gauges – Mechanical measuring devices – Slip gauges – Plug gauge – Micrometers in bars optical flat etc.

5. Automobile chassis & Systems:

Chassis layout – Shock absorbers in dependent suspension – torsion bars – gear suspension – wheel balancing – tyres and tubes – constructional details of the engine – Ignition system – Fuel system – Lubrication system – Cooling system – Transmission system – Brakes steering mechanism – Electrical circuits and equipment's – Engine troubles – Air conditioning system – Modern trends in automobiles & Engines.

6. Material Science:

Crystallography of metals – Binary alloys – Constitution and equilibrium diagram – methods of studying metal structure – Heat treatment – of steels – Casehardening and surface treatment of steels – Non Ferrous metals and alloys – Creep – Fatigue.

7. Kinematics of Machines:

Kinematics – Velocity and Acceleration – Properties of instantaneous centre – Gears – Gears trains – Oams – Governors – Brakes and dynamometers – Clutches – Power transmission – Chain drives.

8. Dynamics of Machines:

Static force Analysis – Dynamic Force Analysis – Dynamics of Reciprocating Engines – Balancing – Vibration Analysis of Single degree freedom systems – Torsional Vibrations – Vibration isolation.

9. Design of Automobile Machine Parts:

Design of welded joints Design of bolts & nuts Shafts and Axles – Curved beams – Springs – Bearings – clutches – Brakes – Design of connecting rod – Crank shaft fly wheel.

10. Production Technology:

Machine tools – Lathes – Shaper, planner and slotting machines Drilling and boring machine – Milling – Lapping – Tool room – Electro machining – Welding – Brazing – Foundry.

11. Industrial Engineering:

Industrial management – personnel function – Production facilities – Production Planning and control – Wages and incentives Cost Control – Marketing and Sales Promotion.