

# **AUTOMOBILE TECHNOLOGY**

**Class XII**

**AUTO ENGINEERING (627)**

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**THEORY**

**Time: 2.5 Hours+2.5 Hours**

**Theory: 50**  
**Practical: 50**

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|-----------|--|-----------|
| <b>1.</b> | <b>Service Equipment</b>   | <b>10</b> |
|           | <ul style="list-style-type: none"><li>• Construction, working and application of – air compressor, hydraulic hoist, car washer, oil dispenser, grease dispenser, tyre inflator, spark plug cleaner and tester, wheel balance (Dynamic), brake efficiency tester.</li><li>• Preventive, operative and breakdown maintenance schedules.</li></ul>  |           |
| <b>2.</b> | <b>Automobile Lubrication and Cooling System</b>   | <b>8</b>  |
|           | <ul style="list-style-type: none"><li>• Necessity of lubrication, different type of lubricants and their grades (SAE Number), type of lubrication system, function and working of different components (oil pump, oil filter) used in lubrication system, trouble shooting and remedies.</li><li>• Necessity of cooling system, different type of cooling system (water and oil cooling), their merits and demerits, function and working of different components (water pump, radiator, radiator pressure cap, thermostat valve etc.) used in cooling system, trouble shooting and remedies.</li></ul>                        |           |
| <b>3.</b> | <b>Final Drive System</b>  | <b>6</b>  |
|           | <ul style="list-style-type: none"><li>• Function, type and working of universal joints, propeller shafts.</li><li>• Principle and working of differential, rear axle.</li></ul>  |           |
| <b>4.</b> | <b>Front Axle and Steering</b>   | <b>6</b>  |
|           | <ul style="list-style-type: none"><li>• Function, type and operational details of front axles and stub axles: Ackermann's principle of steering, toe-in, toe-out, castor, camber, king pin inclination (steering axis inclination), steering gear box (rack and pinion, worm and nut with re-circulating balls) and steering linkages, power steering, trouble shooting and remedies.</li></ul>  |           |
| <b>5.</b> | <b>Frame and Suspension</b>  | <b>6</b>  |
|           | <ul style="list-style-type: none"><li>• Frame and frameless construction, description of suspension system, leaf springs, coil springs and torsion bar. Function and working of different types of shock absorbers, trouble shooting and remedies.</li></ul>   |           |
| <b>6.</b> | <b>Automobile Electrical System</b>  | <b>7</b>  |
|           | <ul style="list-style-type: none"><li>• Battery (lead acid type) – construction, charging and discharging action, maintenance of batteries concept of maintenance free batteries, different circuit diagrams (Charging circuit, starting circuit, lighting circuit, horn circuit, wiper circuit), Wiring diagram of car, functions of various components used in electrical circuits of automobile. Function and working principle of dynamo alternator, self-starter and three GC unit regulators.</li><li>• Ignition system (battery ignition and magneto ignition), Spark plug – classification, ignition timing.</li></ul> |           |
| <b>7.</b> | <b>Motor Vehicle Act 1983 and Rules</b>  | <b>7</b>  |
|           | <ul style="list-style-type: none"><li>• Provision regarding issue of driving licence, registration, insurance, transfer of ownership, fitness certificate, traffic signs, hand signals used by driver and traffic personnel.</li><li>• Emission, control, sources of emission/pollutants, Emission Norms in India.</li></ul>   |           |

**Note:** Practical will be based on aforesaid theory paper.