

**DETAILED SYLLABUS FOR THE POST OF TRADESMAN (TWO
WHEELER - THREE WHEELER MAINTENANCE)
IN TECHNICAL EDUCATION - DIRECT RECRUITMENT
(Cat. Nos: 421/2023)**

Total Marks : 100

Module 1 Fundamentals – Automobile, Engine (10 Marks)

Definition, History and classification of Automobile.

Classification, Terminology, Principle and Working of engine (2 stroke, 4 stroke, petrol, diesel).

Engine performance- IP, BP, FP, Torque, Compression ratio, Efficiencies (Mechanical, Volumetric , Thermal).

Module 2 Engine – Constructional details (10 Marks)

IC engine components – Cylinder block, Cylinder head, Crank case , Oil sump, Cylinder liner, Piston, Piston rings, Connecting rod, Crank shaft, Flywheel, Valve, Manifolds etc.(function, parts, types, materials).

Valve mechanism, valve timing diagram, valve clearance.

Module 3 Engine – Maintenance and Troubles (10 Marks)

Periodical maintenance.

Decarbonisation, Ovality and taper, Re boring, Honing, Reconditioning of valves.

Engine troubles and their remedies, Engine testing Instruments (name and purpose only).

Module 4 Cooling and Lubrication System (10 Marks)

Cooling system- Necessity, Types, Principle, Working and components of Air and Water(Coolant) cooling system, Troubles and remedies.

Lubrication system- Objectives, Types and components of lubrication system., Troubles and remedies.

Lubricants- Properties and types.

Module 5 Fuel system (10 Marks)

Fuel system-Types and Properties of fuel, Petrol and Diesel fuel system and their Components (Feed pump, Air and Fuel filters, Carburetors, Diesel injection pump, Diesel injector, Fuel gauges, etc.)

Petrol Fuel injection(FI) system. Troubles and remedies of fuel system.

Electric Vehicles – Definition, Types.

Module 6 Transmission System (10 Marks)

Clutch – Function, Types (Dry, Wet, Single plate, Multi plate, Centrifugal) and components, Clutch adjustments, Defects and remedies.

Gear Box (Transmission) – Function, Types (Sliding mesh, Constant mesh, Synchromesh), Working and components, Gear ratio, Automatic transmission (basics), Troubles and remedies.
Propeller shaft Assembly- Universal joint, Slip joint, Troubles and remedies.
Differential unit – Function, Working, Types of gears, Troubles and remedies.
Rear axles – Types (Full floating, Semi floating, Three Quarter floating), Troubles and remedies.

Module 7 Brakes, Wheels and Tyres, Chassis and Suspension (10 Marks)

Brakes -Functions, Brake efficiency and stopping distance, Types of brake system (Mechanical, Hydraulic, Pneumatic, drum, disc), Hand brake, Brake adjustments, Troubles and remedies.
Wheels and tyres - Functions, Types, Construction, Care and maintenance of tyre.
Chassis frame -Types, Materials.
Suspension system – Function, Types, Working and components, Springs, Shock absorber, Sprung and unsprung weight, Troubles and remedies.

Module 8 Auto electrical Systems (10 Marks)

Basic parameters and basic laws of electricity.
Batteries - Types, Principle of operation
Lead acid battery- Principle, Working, Construction, Testing, Charging methods, Troubles and remedies.
AC and DC generator, Starting motor.
Head lamp – Types and circuits.
Different lamps in an automobile – Function, circuits
Circuits- Starting, Charging, Horn
Troubles and remedies of Auto electrical systems.

Module 9 Ignition system (10 Marks)

Ignition system- Function, types, components.
Battery ignition, magneto ignition, Electronic ignition.
Troubles and remedies of ignition system.

Module10 Tools, Traffic Rules, Emission control, Safety (10 Marks)

Basic Tools and Equipments used in an automobile station.
Traffic rules.
Emission control- Pollutants, Euro/ Bharat (BS) norms, Emission control systems, Positive crank case ventilation (PCV), Air injection system, Catalytic convertor, Silencer.
Industrial safety.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.

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