

Detailed Syllabus for the post of Training Instructor – (Mechanic Motor Vehicle) in Scheduled Caste Development Department
(Cat.No:358/2025,359/2025)

Module 1 (10 Marks)

Safety, marking tools and measuring instruments:
First aid, Occupational Safety & Health, safety in workshop, different marking tools, different measuring tools, vernier calipers, micrometer, telescopic gauge, bore dial gauge, dial test indicator, straight edge, feeler gauge, thread pitch gauge, vacuum gauge, tire pressure gauge, etc. Basic fitting: Basic fitting tools, Fasteners, gaskets & oil seals, cutting tools, drilling machine, taps & dies, etc.

Module 2 (10 Marks)

Electrical and electronic systems related to automobiles: Basic electricity. Fuses & circuit breakers. Solenoids & relays. Battery – types, construction, charging, care & maintenance, troubleshooting, special tools. Alternator & Starting motor: Need, types, components, construction, working, maintenance, troubleshooting and special tools (if any). Basics of AC & DC generators and related circuits using in vehicles. Vehicle lighting systems & Electrical accessories – Need, types, components, construction, working, maintenance and troubleshooting.

Module 3 (10 Marks)

IC Engine – Terms related to engine, Otto cycle, Diesel cycle, firing order, valve timing diagram, etc. 10

Module 4 (10 Marks)

IC Engine Construction – Need, types, components, construction, working, maintenance, troubleshooting and special tools of each item.

Module 5 (10 Marks)

Cooling system – Need, types, components, construction, working, maintenance and troubleshooting.
Lubrication system – Need, types, components, construction, working, maintenance and troubleshooting.

Module 6 (10 Marks)

Fuel system: Fuel system in IC engines (Petrol & Diesel) :
Electronic diesel & petrol control systems (EFI, MPFI, CRDI,

HEUI, ECU, etc.) – Need, types, components, construction, working, maintenance, troubleshooting and special tools.
Intake, exhaust systems, emission and pollution control: Intake & exhaust systems – Need, types, components, construction, troubleshooting, working and maintenance. Emission control – Basics, types, Emission control systems – EGR, DPF, SCR, evaporative emission control, catalytic convertors, etc.

Module 7

(10 Marks)

Clutch – Need, types, components, construction, working, troubleshooting and maintenance. Gearbox & Automatic transmission systems – Need, types, components, construction, working, troubleshooting and maintenance.

Module 8

(10 Marks)

Suspension system – Need, types, components, construction, working, troubleshooting and maintenance.
Wheels & Tyres – Need, types, components, construction, working, troubleshooting and maintenance.

Module 9

(10 Marks)

Steering System – Need, types, components, construction, working, troubleshooting and maintenance.
Steering geometry and related terms.
Drive axle, dead axle, front wheel drive & all-wheel drive systems (except gearbox & clutch) – Need, types, components, construction, working, troubleshooting and maintenance.

Module 10

(10 Marks)

Braking system – Need, types, components, construction, working, troubleshooting and maintenance.
HVAC in automobiles – Need, types, components, construction, working, maintenance and troubleshooting.

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