

**INDIRA TECHNICAL EDUCATION SOCIETY,
NASHIK**

**CERTIFICATE COURSE
DIESEL VEHICLE MECHANIC (DVM)**

**EXAM SCHEME: THEORY PAPER 100 MARKS – 3 HRS.
PRACTICAL 100 MARKS – 2 HRS.**

THEORY SYLLABUS

OBJECTIVE

- i) Student must get conversant with repair of automobile parts like Engine, Gearbox etc.
- ii) Student must be able to diagnose the vehicle defect & Repair the same as well as to maintain them.

1. SAFETY

Safety precaution to be observed in workshop / motor garage. Tools and Equipment : Hand Tools and equipment for performance measurement in Automobile Trade.

2. MOTOR VEHICLE INDUSTRY

General idea of motor vehicle. Motor vehicle manufacturer in India. Indian Automobile and Accessories manufacturer.

3. ENGINE

General description of internal combustion engine.

- i) Principal of operation of 4 stroke diesel engines.
- ii) Material used for diesel engine parts.
- iii) Engines various parts and their functions.
- iv) Process of combustion and detonation.
- v) Different designs of combustion chambers. (Automobile use).
- vi) Diesel Engine : upkeep, maintenance and repairs and overhauling decarbonizing and troubleshooting.
- vii) Use of gauges like vacuum gauge, compression gauge, Stroboscope and dynamometer test.
- viii) Valve adjustment and valve timing diagram etc.
- ix) Definition of horse power, Mechanical efficiency, brake, horse power, cubic capacity etc.

4. FUEL FEED AND EXHAUST SYSTEM

- i) General layout of diesel fuel injection system.
- ii) Working of diesel fuel system parts like – fuel pump, fuel filters, fuel injection pumps types or governors and their working.
- iii) Distributor type fuel injection pump working.
- iv) Fuel airlock removing.
- v) Injections and injectors testing.
- vi) Fuel feed pump parts.
- vii) Phasing and calibration of fuel Injection pump.
- viii) Replacing F. I. Pump from the Engine.
- ix) 3Phase of Diesel fuel combustion.
- x) Fuel gauge.
- xi) Diesel as a Fuel, octane number, Air cleaner.
- xii) Trouble shooting and maintenance of fuel Injection system.
- xiii) Manifold and silencer muffler.
- xiv) Direct and indirect injection.

5. ENGINE COOLING SYSTEM

Visit :- <http://www.indiratechnical.com/>

Contact us :- Mobile:-9373920251

Necessity of Diesel Engine cooling – types of Engine cooling systems – Air cooling system - water cooling – it's types and then working – radiators construction – parts in water cooling system – thermostat – water pump fan belt, Temperature gauge – Radiator pressure cap – De-aeration cooling system – cooling system additives – cooling system – troubles and maintenance.

6. ENGINE LUBRICATION SYSTEM

Necessity of lubrication. Types of lubricants used in motor vehicle – Lubricant system & types of Lubrication system – Splash lubrication, force feed lubrication – mist lubrication – Two stroke lubrication – Parts in engine lubrication system – their types & functions – oil filters – by pass and pressure relief valve – oil – pump – Oil pressure gauge – Oil coolers – Heat exchangers – Automobile lubricants types – liquid, semi solid and solid lubricants – S.A./E. Number, Viscosity – oil used – oil used in Engine, Gear box, differentials etc. additives – greases, chassis lubrication – various types of Bearing used in motor vehicles – lubrication system troubles and maintenance.

7. AUTOMOBILE ELECTRICITY

Necessity of electrical system, Working of Auto electricity – construction, operation and maintenance and storage battery, dynamo, Alternator, starter – Ignition system – Inverter working of regulator cut-out of solenoid system – Dashboard instruments seen on instrument panel – their working and maintenance, use of meter such as ohmmeter, voltmeter, megger, multimeter and it's use, H.R.D. tester, Battery charger etc. – care & maintenance of auto electrical system, Electronic Ignition system.

8. TRANSMISSION SYSTEM

- I) Parts of the Transmission system.
- II) Clutch : Principle, Construction & Operation of various types.
- III) Gear box : Principle, Construction & Operation of various types.
- IV) Propeller shaft & universal Joints : Principal, Construction & Operation of various types.
- V) Final drive: Principle, Construction & Operation.
- VI) Rear Axle & Differential : Principal, Construction & Operation of various types. – 4 wheel drive operation.
- VII) Various adjustments in transmission system, troubleshooting & remedies in transmission system.

9. BREAK SYSTEM

- I) Necessity of breaks to motor vehicle.
- II) Various types of brakes system & their construction & operation.
- III) Disc Break & Drum Breaks, Vacuum Breaks.
- IV) Power breaks – Air pressure breaks.
- V) Maintenance of break system.

10. STEERING SYSTEM

- I) Necessity of steering system.
- II) Types of steering system. Power steering concept.
- III) Construction, operation & Maintenance of steering system.
- IV) Steering geometry & wheel alignment – possible faults rectification.
- V) Steering system maintenance.

11. SUSPENSION SYSTEM

- 1) Necessity of suspension.
- 2) Types of suspension system – it's parts & functions.
- 3) Construction & function of stub Axle & front Axle.
- 4) Spring & shock absorbers.
- 5) Air suspension
- 6) Faults & remedies in the suspension system.

12. WHEELS, TYRES & CHASSIS

- I) Types of wheels – parts of wheels.
- II) Types of tyres – Tyre construction & maintenance.
- III) Concept of radial tyres. Tyres size.
- IV) Various type of chassis constructions.
- V) Tyres rotation.
- VI) Troubleshooting of tyres, suspension and steering system.

13. PREVENTIVE MAINTENANCE

14. SCHEME OF EXAMINATION :

Theory One Paper	3 hours	100 Marks
Practical	2 hours	75 Marks
Journal		15 Marks
Oral		10 Marks
Total		200 Marks

15. GUIDELINE FOR PAPER SETTER :

- Q. 1 : Compulsory and Objective type 20 Marks
- Q. 2 to Q. 8 : Candidate has to solve any five question out of these seven 16 Marks each

16. WEIGHTAGE :

Topic 1, 2, 3	25 %
Topic 4, 5, 6 & 7	25 %
Topic 8 & 9	20 %
Topic 10, 11 & 12	20 %
Topic 13	10 %

