

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN AUTOMOBILE ENGINEERING

SEMESTER: V

Subject Name: Diagnosis and Testing - I (Auto Engines)

| Sr. No. | Course Content |
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| 1 | Measurement and Inspection: S.I. system of measurement, Measuring tools, List of engine parts. |
| 2 | Engine Disassembly and Cleaning: Upper engine Disassembly and cleaning, Lower engine Disassembly and cleaning. |
| 3 | Engine Removal: Engine removal preparation, Engine removal procedure. |
| 4 | Engine Components: Different Engine tests like, compression test, vacuum test, cylinder leakage test etc., Inspection of different engine components, Types of defects (troubles), likely to occur in different engine components and their analysis, Causes and remedies for different troubles in engine components, Procedure of reconditioning of different engine components, Procedure of replacement of different engine components. |
| 5 | Fuel System for Petrol Engines: Inspection, repair and service of fuel tank, fuel lines and fuel filters, Inspection, repair, testing and service of fuel pump, Carburetor, cleaning, servicing and adjustment, Servicing of Air cleaners, Inspection, repair and service of petrol injection system. |
| 6 | Fuel System for Diesel Engines: Testing and adjustment of fuel injectors and nozzles, Calibration and phasing of fuel injection pump, Servicing of the fuel feed pump, Procedure of checking and setting of governors, Checking and setting of injection timing, Procedure of replacement of the fuel filters, Bleeding of the diesel fuel feed system. |
| 7 | Cooling System: Causes of engine overheating, Servicing of the radiator and water jacket, Detection and repairs of leakage in the radiator and cooling system, Repairs, maintenance and over hauling of water pump, Testing of thermostat valve, Defects in the cooling system components, their causes and remedies, Inspection and adjustment of the fan belt. |
| 8 | Lubricating System: Checking and testing of the lubricating system, Servicing of oil pump and relief valve. Deterioration of Engine oil, Excessive oil consumption, Low and high oil pressure, Necessity of oil change and its interval, Servicing and replacement of the oil. |

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| 9 | <p>Engine Trouble Shooting: Causes for the different troubles and their remedial measures. Procedure of decarbonising of the engine, Procedure of major and minor Tune-Up, Difference between major and minor overhaul of the engine.</p> |
| 10 | <p>Engine Performance Testing: Types of dynamometer, working principle, merits and limitations. Engine power measurements and related terms, Determination of I.H.P., B.H.P., F.H.P. and torque. Computation of various efficiencies, mean effective pressure, specific fuel consumption, Plotting of the graphs and interpretation of the data from the graph. Morse Test on I.C. Engine, Heat Balance Sheet.</p> |

Reference Books:

| Sr. No. | Name of Books | Author |
|---------|---------------------------------------|--------------------|
| 1. | Automobile Mechanics | W. H. Crouse |
| 2. | Automotive Engines Theory & Servicing | James D. Halderman |
| 3. | Auto Engines | Venk & Spicer |
| 4. | Audels auto guide | Audels |
| 5. | Automobile Engineering | R. B. Gupta |
| 6. | Automobile Technology | N.K Giri |
| 7. | Auto Diagnosis and tune-up | J. A. Johnsen |
| 8. | Diesel equipment – I | Erich J. Schulz |
| 9. | Diesel equipment – II | Erich J. Schulz |