

# GUJARAT TECHNOLOGICAL UNIVERSITY

## DIPLOMA IN AUTOMOBILE ENGINEERING

### SEMESTER: V

Subject Name: **Diagnosis and Testing – III (Auto Electrical System)**

Sr. No.	Course Content
1	<p><b>Automobile Battery:</b>            Different troubles of the battery, Causes and remedies for various troubles, Symptoms and effects of various battery failures, Different battery tests, Determination of battery condition, Determination of serviceability of the battery, Reconditioning of the battery, Battery charging.</p>
2	<p><b>Ignition System:</b>            Different ignition failures, their causes and remedies, Quick checking of ignition system, Ignition service, Testing of different ignition system components, Procedure of checking and setting of ignition timing, Use of oscilloscope ignition tester for diagnosis of ignition trouble, Testing of the transistorized ignition system and their components, Servicing testing and adjustment of the fly wheel magneto ignition system.</p>
3	<p><b>Starting System:</b>            Common troubles in starting motor and its drive mechanism, Causes and remedies for the various troubles, Maintenance of the starter motor and its circuits, Reconditioning of the starter motor, Different starter tests and interpretation of the results, Testing of the starter switches.</p>
4	<p><b>Charging System:</b>            Different troubles in alternator, their causes and remedies, Testing procedure of alternator components, Testing procedure of regulator, Precautions to be observed in the use of alternator and regulator, Maintenance of alternator and regulator.</p>
5	<p><b>Lighting System:</b>            Faults in the Automobile lighting circuits, Causes and remedies for various troubles, Method of focusing the head light.</p>
6	<p><b>Indicating and Warning Devices:</b>            Troubles in fuel level gauge and its circuits, Causes and remedies for the various troubles, Procedure of testing gauge and tank units, Troubles in the water temperature gauge, Causes and remedies for the troubles in temperature gauge, Procedure for testing of temperature gauge unit, Troubles in the oil pressure gauge, Causes and remedies for the troubles, Testing procedure of oil pressure gauge, Common troubles in speedometer and odometer, Causes and remedies for the troubles in speedometer and odometer, Troubles, causes and remedies in indicator devices and flasher unit.</p>

7	<p><b>Miscellaneous Electrical Equipments and Accessories:</b>          Troubles in wind shield wiper and its circuit, Possible causes and remedies for the trouble, Troubles in electric horn (high frequency) relay and its circuit, Probable causes and remedies for the troubles, Method of replacement of the horn components, Troubles in electric fuel pumps, Causes and remedies for the troubles, Testing procedure of electric fuel pump, Troubles in vehicle air-conditioning, Causes and remedies for troubles in Air-Conditioning, Troubles, causes and remedies in power window operating system.</p>
8	<p><b>Wiring and Installation:</b>          Troubles in auto vehicle wiring, Causes and remedies of the troubles, Testing of broken cable, Causes of deterioration of cable after long service and their remedies, Types of deterioration of cables.</p>
9	<p><b>Testing Instruments:</b>          Method of using battery tester, Method of using ignition coil tester, Method of using the condenser tester, Method of using the distributor tester, Method of using cam angle and RPM tester, Method of using ignition scope and interpreting the results obtained, Method of using ignition timing device, Method of using growler for generators and starters.</p>
10	<p><b>Electrical System Inspection:</b>          Periodical checking of the automobile electrical equipment e.g. battery, cables, Regulator, Generator, Charging, Circuit cranking motor ignition system and electrical accessories.</p>

### Reference Books:

1. Automotive Electrical equipment, W. H. Crouse.
2. Automotive Electrical maintenance, A. W. Judge.
3. Automotive diagnosis & tune-up, J. A. Johnson.
4. Automobile fault tracing, Station Abbey.
5. Automotive Electrical equipment, P. L. Kohli.
6. Auto Electrical Systems, C. P. Nakra.
7. Automobile Technology, N. K. Giri.