

BHARATHIAR UNIVERSITY, COIMBATORE 641 046
DIPLOMA IN AUTO ELECTRICIAN
(For the CCCC students admitted from the academic year 2016-17 onwards)

SCHEME OF EXAMINATIONS

S.NO	SUBJECT	Examinations	
		Duration Hrs.	MARKS
1	Paper I - Human Resource Development	3	100
2	Paper II - Auto Electrical And Electronics Technology I	3	100
3	Paper III - Auto Electrical And Electronics Technology II	3	100
4	Paper IV - Practical I	3	100
5	Paper V - Practical II	3	100
	TOTAL		500

COURSE DURATION - ONE YEAR

DIPLOMA IN AUTO ELECTRICIAN

PAPER – 1 HUMAN RESOURCE DEVELOPMENT

PAPER – 2 AUTO ELECTRICAL AND ELECTRONICS TECHNOLOGY- 1

PAPER – 3 AUTO ELECTRICAL AND ELECTRONICS TECHNOLOGY- 2

PAPER – 4 PRACTICAL - 1

PAPER – 5 PRACTICAL - 2

Paper 1

HUMAN RESOURCE DEVELOPMENT

Unit - 1

Entrepreneurial Development - Continuous effort to innovate - Everyday development - Developmental needs - Observing the market trend - Cooperative effort - Using Magazines - Books and Internet

Unit - 2

Physical care - Securing and Maintaining the physical ability - Hath yoga – Iyama - Niyama- Asanas - Public Health – Food Health

Unit - 3

Mental health care and training – Pranayama – Meditation - Nurturing good thoughts - Cohesion with nature - self realization

Unit - 4

Communication Skills - Speaking skills - Conversational English - Interpersonal and Intrapersonal skills - Assertiveness Skills

Unit - 5

Social responsibility - Public Welfare Importance of helping others - our cultural values of giving - knowledge of our legal and constitutional structure - Duties of the responsible citizens

Reference Book

- Yogi Sudhanantha Bharathi (2001) – Thirumanthiram vilakkam – Manickavasakar publications – Sidhambaram
- Technical communication - Principles and practice, Second edition by Meenakshi Raman and Sangeetha Sharma, Oxford Publications New Delhi(2012)
- Value Education-Third Edition Compiled by Vision for Wisdom ,World community service centre Aliyar. Vethathiri publications(2009)
- Introduction to the Constitution of India - 21st Edition Durga Das Basu , Lexis Nexis Publication (2013)

PAPER – 2

AUTO ELECTRICAL AND ELECTRONICS TECHNOLOGY- 1

UNIT – 1

BASICS OF AUTOMOBILES.

Types of engine - petrol engine - diesel engine - engine components - cooling system - lubrication system - chassis - clutch - gear box - propeller shaft - differential - axle - wheel and tyre

UNIT - 2

SUSPENSION, BRAKES, AERODYNAMICS AND SAFETY

Air suspension - Closed loop suspension - compensated suspension - anti skid braking system - retarders - regenerative braking - safety gauge air backs - crash resistance - Aerodynamics for modern vehicles - safety systems - adaptive cruise control system.

UNIT – 3

ECM AND SENSORS

ECM - Components of ECM - Actuators Inductive - Hall Effect - hot wire - thermostat piezo electric - piezo resistive based sensors - Throttle position - air mass flow - crank shaft position - camshaft position - engine and wheel speed - steering position - tire pressure - brake pressure - steering torque - fuel level – crash - exhaust oxygen level (two step and linear lambda) - knock - engine temperature - manifold temperature and pressure sensors.

UNIT - 4

VEHICLE AUTOMATED TRACKS AND HYBRID VEHICLE.

Preparation and maintenance of proper road network - National highway network with automated roads and vehicles - Satellite control of vehicle operation for safe and fast travel – GPS - Navigation system – Electric vehicles - hybrid vehicles - flexible fuel vehicles (FFV) - solar powered vehicles - magnetic track vehicles - fuel cells vehicles.

UNIT - 5

HEATING VENTILATION AIR CONDITIONING (HVAC)

Control devices - Thermostatic expansion valve system - Thermal expansion valves – Air conditioning compressors - Condensers - evaporators – Receiver - drier - Lines & hoses - TX valve construction - Temperature monitoring thermostat – Refrigerants - Pressure switches - Heating elements.

Reference Book

- Automobile Engineering volume 1,2 - Dr Kirupal sing Standard publishers (2011)
- Automotive Mechanics - N K Giri , Khana Publishers, New Delhi (2016)
- A Textbook of Automobile Engineering – S.K. Gupta, S.Chand Publishing (2014)

PAPER – 3

AUTO ELECTRICAL AND ELECTRONICS TECHNOLOGY- 2

UNIT - 1

BATTERY

Principle and construction of Lead Acid Battery – Nickel Cadmium Battery - Nickel Metal - Hybrid Battery - Sodium Sulfur Battery and Aluminum Air Battery - Characteristics of Battery - Battery Rating - Capacity and Efficiency - Various Tests on Battery - Battery Charging Techniques - Maintenance of batteries.

UNIT - 2

ELECTRICAL COMPONENTS

Requirements of Starter Motor - Starter Motor types - construction and characteristics - Starter drive mechanisms - Starter Switches and Solenoids - Generators - Alternators types - Construction - Voltage and Current Regulation - Cutout relays and regulators – Charging circuits for D.C. Generator - A.C. Single Phase and Three Phase Alternators.

UNIT - 3

IGNITION AND INJECTION SYSTEMS

Battery Coil and Magneto Ignition System - Circuit details - Components of Battery Coil and Magneto Ignition System - Centrifugal and Vacuum Advance Mechanisms - Spark Plugs - Constructional details and Types - CRDI

UNIT - 4

ELECTRICAL AND ELECTRONIC IGNITION SYSTEMS

Electronically Assisted and Full Electronic Ignition System(MPFI) - Noncontact type Ignition Triggering devices - Capacitive Discharge Ignition - Distributor less Ignition System - Digital Ignition System - Control Strategy of Electronic Ignition System.

UNIT - 5

WIRING, LIGHTING AND OTHER INSTRUMENTS AND SENSORS

Automotive wiring - insulated and earth return system - positive and negative earth systems - head lamp and indicator lamp details - electrical and electronic fuel lift pumps - theory and constructional details of dash board instruments - speedometer - odometer - fuel level indicator - oil pressure and coolant temperature sensors.

Reference Book

- Automotive Mechanics – William H.Crouse , Donald L.Anglin, McGraw Hill Education (India) Private Limited, 10th Edition (2006)
- Automotive Air conditioning - Paul weisler, Reston Publication (1990)
- Bosch Automotive Hand Book ,6th Edition (2004)

PAPER – 4

PRACTICAL-I

- ❖ Maintenance of automobile engine
- ❖ Identification of various components of MPFI system
- ❖ Identification of various sensors installed in engine, installation and testing
- ❖ Testing actuators
- ❖ Identification of various components of CRDI system
- ❖ Air conditioning components performance test and gas filling
- ❖ Air bag system servicing

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PRACTICAL – II

- ❖ Cleaning and topping up of lead acid battery, Battery testing and charging
- ❖ Starting motor servicing
- ❖ Alternator servicing
- ❖ Ignition system servicing
- ❖ Trace the light circuit test bulbs aligning of head lights
- ❖ Trouble shooting and remedy for horn operation
- ❖ Check and replace of speedometer dash board meters