

**BHARATHIAR UNIVERSITY, COIMBATORE 641 046**  
**DIPLOMA IN ELECTRICAL TECHNICIAN**  
 (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 - Electrical Engineering I	3	100
3	Paper III - Electrical Engineering 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 ELECTRICAL TECHNICIAN**

**Paper – 1 Human Resource Development**

**Paper – 2 Electrical Engineering 1**

**Paper - 3 Electrical Engineering 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 - Hatha yoga – Iyama - Niyamam - 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 - 21<sup>st</sup> Edition Durga Das Basu , Lexis Nexis Publication (2013)

**PAPER – 2**

**ELECTRICAL ENGINEERING - I**

**UNIT I**

**ELECTRICAL CIRCUITS**

Ohm's Law – Kirchoff's Laws – Introduction to AC Circuits – Waveforms and RMS Value – Power and Power factor – Single Phase and Three Phase Balanced Circuits - Operating Principles of Moving Coil and Moving Iron Instruments (Ammeters and Voltmeters) - Dynamometer type - Watt meters and Energy meters.

**UNIT II**

**DC MACHINES**

Construction - Principle of Operation - Basic Equations and Applications of DC Generators - DC Motor.

**UNIT III**

**TRANSFORMERS**

Sumpners test - Construction - Principle of Operation – Classifications - Open circuit test - Short Circuit test - Auto transformer - Parallel operations of transformers.

**UNIT IV**

**WIRING & SERVICING**

House wiring using switches - Stair case wiring - Florescent lamp wiring - Industrial wiring - Winding Types - Fan assembly - Faults and servicing Grinder and Mixie.

**UNIT V**

**ELECTRICAL SAFETY & TOOL DETAILS**

Basic safety rules - First aid equipments - Electrical faults - Protective devices - Tool assists for electrical servicing - operation details of Megger

**REFERENCES BOOK**

- Muthusubramanian R, Salivahanan S and Muraleedharan K A, “Basic Electrical, Electronics and Computer Engineering”, Tata McGraw Hill, Second Edition, (2006).
- Jayachandarn.K, Natarjan.S, Balasubramnian.S , “ Trainer on engineering practices lab “, Anuradha Publishers, (2007).
- Basic Electrical Engineering - Chandan Chanda, Sudipta Nath, Abhijit Chakrabarti , Publisher Mcgraw Hill Education ,1st Edition (2008)

## **PAPER – 3**

### **ELECTRICAL ENGINEERING - II**

#### **UNIT I**

##### **AC MACHINES**

Working of I phase and 3 phase Induction motor - Types of starters - speed control methods of Induction motors - Applications of Induction motors in industries.

#### **UNIT II**

##### **ELECTRICAL MEASUREMENTS**

Operating Principles of Moving Coil and Moving Iron Instruments (Ammeters and Voltmeters) - Dynamometer type Watt meters and Energy meters - Power factor meter - Tachometer - Tong Tester.

#### **UNIT III**

##### **BASIC ELECTRONICS**

Characteristics of PN Junction Diode – Zener Effect – Zener Diode and its Characteristics – Half wave and Full wave Rectifiers – Transistors.

#### **UNIT IV**

##### **UPS, BATTERIES & SMPS**

Working details of on line UPS - Off Line UPS and Hybrid UPS - charging and testing details of Lead Acid Battery - Nickel Cadmium battery - sodium sulphur battery and Aluminium Air battery - working of SMPS

#### **UNIT V**

##### **SERVICING OF ELECTRONICS APPLIANCES**

Identifying Major Faults and rectification techniques – Radio – TV – Fax - Microwave oven - washing machines - Air Conditioners - Fridge

#### **REFERENCES BOOK**

- V.N. Mittle “Basic Electrical Engineering”, Tata McGraw Hill Edition, New Delhi , (1990)
- R.S. Sedha, “Applied Electronics” S. Chand & Co, (2006)
- Mehta V K, “Principles of Electronics”, S.Chand & Company Ltd, (1994 )

**PAPER – 4**

**PRACTICAL – I**

- Use care and maintenance of various hand tools
- practices of electrical wiring (residential building, institute, hostel, hotel)
- Practice on wiring of electric motor, control panel
- Test of different circuit breakers
- Fault finding practice in wiring
- Practice on soldering & brazing
- Practice on installation and overhauling common electrical accessories
- Drilling practice in hand drilling and power drilling machines

**PAPER – 5**

**PRACTICAL – II**

- Use of PMMC, MI meter, Multi meter
- Practice on winding of small transformer
- Practice on armature winding
- Practice on AC machine winding / DC machine winding
- Servicing of home appliances (Mixie, Grinder, Electric oven, Washing machine, Fridge, Heater, Iron Box, kettle)