

# STUDY AND EVALUATION SCHEME FOR DIPLOMA PROGRAMME IN ELECTRICAL & ELECTRONICS ENGINEERING

## Fourth Semester

Sr. No.	Subject	L	T	P	Total	Evaluation Scheme						Total Marks
						Internal Assessment		External Assessment (Examination)				
						Theory	Practical	Theory		Practical		
						Max. Marks	Max. Marks	Max. Marks	Hrs.	Max. Marks	Hrs.	
4.1	Electrical Engineering Design and Drawing	-	-	6	6	-	50	100	3.00	50	3.00	200
4.2	D.C. Machines and Transformers	5	-	3	8	20	30	50	2.5	50	3.00	150
4.3	Digital Electronics and Microprocessors	5	-	3	8	20	30	50	2.5	50	3.00	150
4.4	Generation, Transmission and Distribution of Electrical Power	5	-	3	8	20	30	50	2.5	50	3.00	150
4.5	Industrial Instrumentation and Control	5	-	3	8	20	30	50	2.5	50	3.00	150
4.6	Estimating and Costing in Electrical Engineering	6	-	-	6	50	-	100	3.00	-	-	150
4.7	Industrial Training	Industrial Training of 30 days done after 4th Semester would be evaluated in 5th semester through Report and Viva-voce.										
General proficiency #		-	-	4	4	-	25	-	-	-	-	25
Industrial Exposure (Assesment at Inst. Level)+		-	-	-	-	-	25	-	-	-	-	25
<b>Total</b>		<b>26</b>	<b>-</b>	<b>22</b>	<b>48</b>	<b>130</b>	<b>220</b>	<b>400</b>	<b>-</b>	<b>250</b>	<b>-</b>	<b>1000</b>

# General Proficiency will comprise of various co-curricular activities like games, hobby clubs, seminars, declamation contests, extension lectures, NCC, NSS and cultural activities, elementary mathematics, GS & GK etc.

+ Industrial visit compulsory to minimum 2 industries or Departments.

Note:- 1. Each period will be 50 minutes.

2. Each session will be of 16 weeks.

3. Effective teaching will be at least 12.5 weeks.

## 4.1 ELECTRICAL ENGINEERING DESIGN AND DRAWING

L    P  
Periods/week -    6

### RATIONALE

A polytechnic pass-out in electrical engineering is supposed to have ability to

- i) Read, understand and interpret engineering drawings
- ii) Communicate and co-relate through sketches and drawings
- iii) Prepare working drawings of panels, transmission and distribution

The contents of this subject has been designed to develop requisite knowledge and skills of electrical drawings in the students of diploma in electrical engineering.

### DETAILED CONTENTS (To make 25 Sheets)

1. Symbols and Signs Conventions (**2 Sheets**) (06 Periods)  
Various Electrical Symbols used in Domestic and Industrial Installation and Power System as per BIS
2. Panels/Distribution Boards (**3 Sheets**) (18 Periods)  
Design and Drawing of panels/Distribution board using MCBs, ELCB, main switches and change over switches for domestic installation, industrial and commercial installation.
3. Orthographic projections of Simple Electrical Parts (**4 Sheets**) (12 Periods)
  - Pin type and shackle type insulator (Pin Type 11kV/66kV)
  - Bobbins of a small transformer / choke
  - Stay insulators/Suspension type insulators
  - Free hand sketching of M.C.B. and E.L.C.B Placed on Distribution Board.
4. Orthographic Projection of Machine Parts (**4 Sheets**) (12 Periods)
  - Rotor of a squirrel cage induction motor
  - Motor body (induction motor) as per IS Specifications (using outside dimensions)
  - Slip rings of 3-phase induction Motor.
  - Stator of 3 phase Induction motor (Sectional View)

5. Contactor Control Circuits: Schematic and wiring diagram (**3 Sheets**) (24 Periods)
  - DOL Starter of 3-phase induction Motor
  - Forwarding/reversing of 3-phase induction motor
  - Limit switch control of a 3-phase induction motor
  - Sequence operation of two motors using T.D.R.
  - Two speed motor control
  - Automatic star-delta starter for 3-phase induction motor
6. Earthing – Layout of earthing of substation, earthing of poles, transformers (3Sheets) (08 Periods)
7. Key diagram of 33/11 KVA substation (2 Sheets) (06 Periods)
8. Design/Drawing of application circuit used in intelligent building(04sheets) (10 Periods)
  - a. Security system/intelligent camera/automatic recording/photography system
  - b. Stage lighting
  - c. Safety system
  - d. Centralized air-conditioning system
  - e. Computer Networking

### **INSTRUCTIONAL STRATEGY**

Teacher should identify/prepare more exercises on the pattern shown above. The teacher should make the students confident in making drawing and layouts of electrical wiring installations and doing estimation and costing. This capability will lead the students to become a successful entrepreneur. Take the students to field/laboratory and show the material and equipment.

### **RECOMMENDED BOOKS**

1. Electrical Engineering Design and Drawings by Surjeet Singh, Dhanpat Rai and Co, New Delhi
2. Electrical Engineering Design and Drawings by SK Bhattacharya, SK Kataria and Sons, New Delhi
3. Electrical Engineering Design and Drawings by Ubhi & Marwaha, IPH, New Delhi
4. Electrical Design and Drawing by SK Sahdev, Uneek Publications, Jalandhar
5. Electrical Engineering Drawing by Surjit Singh, SK Kataria and Sons, New Delhi

**SUGGESTED DISTRIBUTION OF MARKS**

<b>Topic</b>	<b>Time Allotted (Periods)</b>	<b>Marks Allocation (%)</b>
1	06	6
2	18	18
3	12	12
4	12	12
5	24	24
6	08	08
7	06	10
8	10	10
<b>Total</b>	<b>96</b>	<b>100</b>