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Electrical Estimation and Contracting — Complete Syllabus

BTEUP Diploma in Electrical Engineering • 5th Semester • Session 2026-27
Subject 5.6 (Practicum) • Total 100 Marks • 4 Credits • L 2 - P 4

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.6	Electrical Estimation and Contracting	Practicum	2 - 4	4	60	40 (3 hrs)	100
Electrical Estimation and Contracting Total				4	60	40	100

What This Subject Aims To Do

To help students design electrical installations with costing for tendering.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
I	Electric Installation and Safety	04	15%
II	Estimation and Costing	08	30%
III	Non-Industrial Installations	06	20%
IV	Industrial Installation	04	15%
V	Distribution Lines and LT Substation	06	20%

Unit - I: Electric Installation and Safety (04 Periods, 15%)

Topics: Scope and features of National electric code 2023; Types of electrical installation; Fundamental principles for electrical installation; Permit to work, safety instructions and safety practices; Purpose of estimating and costing.

Unit - II: Estimation and Costing (08 Periods, 30%)

Topics: Meaning and purpose of - rough estimate, detailed estimate, supplementary estimate, annual maintenance estimate and revised estimate; Factors to be considered while preparation of detailed estimate and economical execution of work; Contracts - Concepts of contracts, types of contracts, contractor, role of contractor; Tenders and Quotations - Type of tender, tender notice, preparation of tender document, and method of opening of tender; Quotation, quotation format, comparison between tender and quotation; Comparative statement, format comparative statement; Order format, placing of purchasing order; Principles of execution of works, planning, organizing and completion of work, Billing of work.

Unit - III: Non-Industrial Installations (06 Periods, 20%)

Topics: Types of non-industrial installations - Office buildings, shopping and commercial centre, residential installation, Electric service and supply; Design consideration of electrical installation in commercial buildings; Design procedure of installation - steps involved in detail, Estimating and costing of unit; Earthing of commercial installation; Design electrical installation scheme of commercial complex.

Unit - IV: Industrial Installation (04 Periods, 15%)

Topics: Classification of industrial buildings; Classification based on power consumption; Drawing of wiring diagram and single line diagram for single phase and three phase Motors; Design consideration in industrial installations; Design procedure of installation - detailed steps; Design electrical installation scheme of factory/ small industrial unit, Preparation of material schedule and detailed estimation; Installation and estimation of agricultural pump and flourmill.

Unit - V: Distribution Lines and LT Substation (06 Periods, 20%)

Topics: Introduction to overhead and underground distribution line; Materials used for distribution line HT and LV; Cables used for distribution line, factors determining selection of LT/ HT power Cables, cable laying and cable termination method according to IS; Design, estimation and costing of HT LT overhead line and underground cabling; Estimation of load, Load factor, diversity factor and determination of rating of distribution Transformer; Design, estimation and costing of outdoor and indoor 11 KV substation.

Practical Work

- Unit I — To understand the objective of safety in Electric installation.
- Unit I — List out all the personal protective equipment's PPE's available in industry.
- Unit I — Prepare an estimate of institute/College for electrical connection and costing of equipment's used.
- Unit II — Prepare a tender notice for purchasing a transformer of 100 KVA for commercial installation.
- Unit II — Prepare a quotation for purchasing different electrical material required.
- Unit II — Prepare a comparative statement for above material. Prepare purchase order for the same.
- Unit II — Estimate with a proposal of the electrical Installation of streetlight scheme for small premises after designing.
- Unit II — Estimate with a proposal of the L.T. line installation. Prepare report and draw sheet.
- Unit III — Prepare Electrical Estimation for Residential and Industrial wirings.
- Unit III — Design drawing, estimating and costing of hall / cinema theatre / commercial installation. Prepare report and draw sheet.
- Unit IV — Design electrical installation scheme for any one factory / small industrial unit. Draw detailed wiring diagram. Prepare material schedule and detailed estimate. Prepare report and draw sheet.
- Unit IV — To plan multiple earthing system for industrial installation.
- Unit IV — To measure the earth resistance of various equipment installed in institute/ college.
- Unit IV — List out the various bus schemes in substation.
- Unit V — Estimate with a proposal of the electrical Installation of streetlight scheme for small premises after designing.
- Unit V — Estimate with a proposal of the L.T. line installation. Prepare report and draw sheet.
- Unit V — Estimate with a proposal of the 500 KVA, 11/0.433 KV outdoor substation and prepare a report.

- Unit V — Identify indoor and outdoor switch gear system.

Reference Books (as listed in the syllabus)

- Raina, K.B.; Dr. S. K. Bhattacharya New Age International Publisher First, Reprint 2010, Electrical Design Estimating and Costing ISBN: 978-81-224-0363-3
- Allagappan, N. S. Ekambarram, Tata Mc-Graw Hill Publishing Co. Ltd, Electrical Estimating and Costing, ISBN 13: 9780074624784
- Singh, Surjit Ravi Deep Singh, Dhanpat Rai and Sons, Electrical Estimating and Costing, ISBN13: 1234567150995
- Gupta, J.B. S.K. Kataria and Sons Reprint Edition, A Course in Electrical Installation Estimating and Costing ISBN 10: 9350142791 13: 978-9350142790
- Bureau of Indian Standard. IS: 732-1989, Code of Practice for Electrical Wiring Installation
- Bureau of Indian Standard. SP-30:2011, National Electrical Code 2011
- Dr. T. D. Bisht, Ashish Sahoo, Dinesh Kumar Gautam, Electrical Design, Drawing & Estimating -I, ISBN No. 978-93-5502-015-4
- Dr. T. D. Bisht, Ashish Sahoo, Electrical Design, Drawing & Estimating -II, ISBN No. 978-93-5502-194-6

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Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.