LNCT University
Diploma EX, V Semester Syllabus

POWER SYSTEM – II (DEX-504)

COURSE OUTCOMES:

After Completing the course student should be able to:

CO-1	Understand the purpose and scope of electrical estimation and costing, identify various wiring systems, materials, tools and standard symbols used in electrical installations.
CO-2	Calculate electrical loads, select appropriate cable sizes, and protective devices. prepare single-line diagrams and cost estimates for residential installations.
CO-3	Plan and estimate the electrical layout, load distribution and material requirements for commercial and small industrial installations, including transformers and panels.
CO-4	Estimate materials and costs for overhead and underground distribution systems, including HT/LT lines, supports and cable jointing and termination techniques.
CO-5	Prepare tender documents, quotations, cost comparisons and analyse labour, material and tax implications involved in electrical contracting work.

UNIT I: INTRODUCTION TO ESTIMATION AND COSTING

Need, scope of estimation and costing, electrical symbols and standards (IS and IE rules), wiring systems: cleat, batten, conduit, and casing-capping, materials required in electrical installation. wiring accessories and their specifications. tools used in wiring installation.

UNIT II: ESTIMATION OF RESIDENTIAL INSTALLATIONS

General rules for wiring installations, load calculation and selection of cable size, selection of protective devices (MCBs, ELCBs, Fuses), preparation of single-line diagram (SLD), estimation and costing for a typical 1bhk, 2bhk, and 3bhk house, schedule of material and costing format.

UNIT III: ESTIMATION OF COMMERCIAL AND INDUSTRIAL INSTALLATIONS

Planning and designing of electrical layout for commercial buildings (shops, offices, schools), estimation of load, sub-circuits, and main circuits. use of rising mains, bus bars, and distribution boards. estimation of small industrial installations. selection of transformers, panels, and motor control centres (qualitative).

UNIT IV: OVERHEAD AND UNDERGROUND DISTRIBUTION LINES

Types of overhead lines and supports (poles and towers). estimation of LT and HT lines with ACSR conductor. stay rods, insulators, cross arms, and earthing. estimation for underground cable laying. cable jointing and termination methods. costing of overhead vs. underground systems.

UNIT V: TENDERING AND CONTRACTING

Definition and types of tenders, preparation of tender documents, quotation and comparative statements, terms and conditions of contract labour and material cost estimation. GST and tax implications in electrical contracts.

List of Suggestive Experiments: -

1. Identify and draw standard electrical symbols used in estimation as per IS/IE rules.
2. Demonstrate different wiring systems (cleat, batten, conduit, casing-capping) using sample boards.
3. Identify and prepare a list of wiring materials and accessories with specifications (IS codes).
4. Use and demonstrate common tools used in wiring installation (wire stripper, tester, crimping tool, etc.).
6. Prepare a Single Line Diagram (SLD) for a 2BHK residential building.
7. Plan and design an electrical layout for a commercial building (e.g., office or school).
8. Prepare a sample tender document for a residential wiring project.
9. Draft a quotation and comparative statement for electrical installations from different suppliers.
10. Prepare a sample contract agreement with terms and conditions for electrical work.

Reference Books: -

1. Electrical Wiring Estimating and Costing – Surjit Singh, Dhanpat Rai & Co.
2. Electrical Estimating and Costing – N. Alagappan, S. Ekambaram, Tata McGraw-Hill.
3. Electrical Design Estimating and Costing – K. B. Raina & S. K. Bhattacharya, New Age International.