

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, APRIL - 2025**

**ELECTRICAL ESTIMATING AND COSTING**

[Maximum Marks: **100**]

[Time: **3 Hours**]

**PART-A**

[Maximum Marks: **10**]

- I. (Answer **all** questions in one or two sentences. Each question carries **2** marks)
1. Define Space height ratio.
  2. State Utilisation factor.
  3. List any two merits of concealed conduit wiring over cleat wiring.
  4. List any two types of earthing.
  5. List the classification of outdoor substation. (5 x 2 = 10)

**PART-B**

[Maximum Marks: **30**]

- II. (Answer **any five** of the following questions. Each question carries **6** marks)
1. State the laws of illumination.
  2. List the factors that affect the illumination on the work plane.
  3. Enlist the factors to be considered while selecting a wiring system.
  4. List the important points to be taken into consideration for the determination of conductor size calculation for domestic wiring.
  5. State the factors which effects the value of earth resistance.
  6. A three phase 415V, 50Hz 10HP Induction motor is to be installed in a workshop.  
Determine the current rating of the copper cable to be used. Assume the efficiency of the motor as 85% and the power factor as 0.8 lag.
  7. Explain any four major components of overhead lines. (5 x 6 = 30)

**PART-C**

[Maximum Marks: 60]

(Answer *one* full question from each Unit. Each full question carries 15 marks)

**UNIT – I**

- III. a. A hall 12m x 8m x 4m is to have direct lighting giving illumination of 80 lux on the working plane 70 cm above the floor. Coefficient of utilization is 0.5 and maintenance factor is 0.8. Find the number of 40W fluorescent lamps required and their rating.

Lamp efficiency may be taken as 40 lumen per watt. Show the disposition of the lamp. (8)

- b. Explain the working of a mercury vapor lamp with a neat sketch. (7)

**OR**

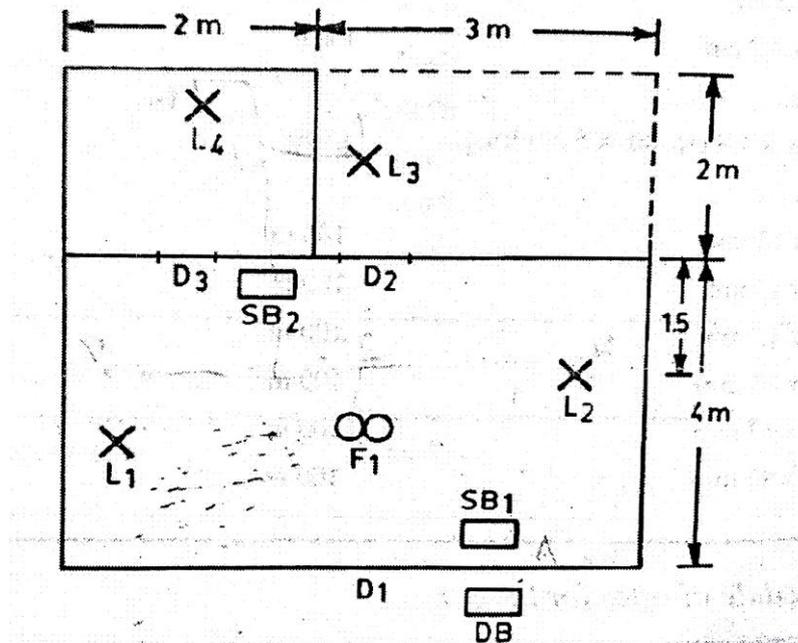
- IV a. In a lighting scheme, lamps having luminous intensity of 900 candela are hung at a height of 8m. The distance between the lamp posts is 12m. Find the illumination at the centre in between the lamp posts and under the lamp. (9)

- b. Explain the following lighting schemes

- (i) Direct                      (ii) Indirect                      (iii) Semi direct. (6)

**UNIT – II**

- V. a. Figure shows the plan of a flat. The flat is to be provided with electrical connections. The position of light and fan points and switch boards have been shown in the figure.



- i) Determine the number of sub-circuits and show these in the installation plan. (5)
- ii) Calculate the size and length of the wire required for wiring installation. (5)
- iii) Prepare an estimate of the quantity of materials required. (5)

**OR**

- VI. a. Explain any two types of internal wiring systems. (8)
- b. Explain the need for subcircuit. Determine the number of subcircuits for the following loads: lamps 60W 10Nos, Fan 60W 6Nos, 5A socket 100W, 8Nos, Refrigerator 500W, 1No, Electric heater 1000 W, 1No. (7)

**UNIT- III**

- VII. a. Draw a neat sketch of standard pipe earthing. (8)
- b. Prepare an estimate for doing pipe earthing. (7)

**OR**

- VIII. Draw a neat sketch and prepare an estimate of the list of materials and cost for providing service connection to a single storey building at 240 V, 50 Hz single phase having a total load of 3 kW. The supply is to be given from an overhead line 15m away from the building. (15)

**UNIT - IV**

- IX. Estimate the material and cost for extending a single-phase distribution line of 230V over a distance of 500m using poles of length 10m. Take span as 50m using 7 /2.59 AAC Conductor. Draw the single line diagram of the extension. (15)

**OR**

- X. Draw a neat sketch and prepare the quantity estimate and electrical accessories required for a 63kVA 11kV/400V pole mounted distribution transformer. (15)

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