

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2018

ELECTRICAL DESIGN AND ESTIMATING

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define Luminous intensity.
2. State Lambert's cosine law of illumination.
3. What do you mean by ceiling rose ?
4. List the various types of poles using in OH lines.
5. List any two protective equipments used in 11KV substations.

(5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Explain the working of a fluorescent lamp with the help of a neat diagram.
2. Define : (a) Luminous flux. (b) Illumination (c) Reflection factor.
3. List out any six relevant general rules for internal wiring.
4. List the various types of earthing and explain any two of them briefly.
5. List the materials required for a 3φ service connection to a consumer from the OH line.
6. Explain different types of OH line conductors.
7. Write a short note on cross arm and list the types.

(5×6 = 30)

PART — C
(Maximum marks : 60)

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

UNIT — I

- III (a) Explain the working of Mercury Vapour lamp with the help of a neat diagram. 9
(b) Write short note on (i) MHCP (ii) Space height ratio (iii) Utilisation factor 6

OR

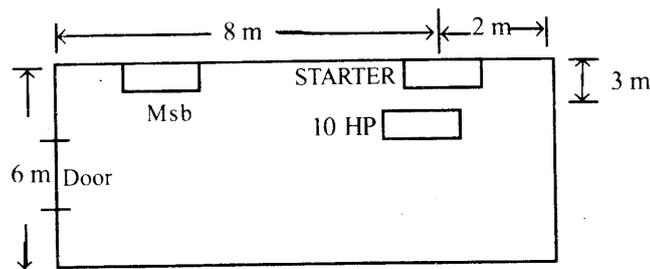
- IV A factory of $15\text{m} \times 9\text{m} \times 5\text{m}$ is to be lighted with an average illumination 100 lux with lamps mounted at height of 3m above the working plane. Show the arrangements of lamps. Take Depreciation factor as 0.5, utilisation factor as 0.5, luminous efficiency 90 lm/W and space height ratio as unity. 15

UNIT — II

- V (a) State the general specification of cables. 5
(b) Prepare the list of materials required for pipe earthing as per IS-3043. 10

OR

- VI A 15HP, 415V, 3 ϕ , 50Hz, 0.8 pf induction motor having an efficiency of 80% is to be installed in a flour mill as per the layout given. Estimate the materials required. Assume missing data if any.



15

UNIT — III

- VII Estimate the quantity of various materials and accessories required for a 11KV 3 ϕ line 2 km long with ACSR conductors over PSCC poles of 8 m height at 75 m span. 15

OR

- VIII Estimate the cost and material for extending a single phase distribution, line of 230V over a distance of 1km using PSCC poles with a span of 80m with 6/1 \times 2.59 ACSR conductors. 15

UNIT — IV

- IX (a) List advantages and disadvantages of outdoor substations. 7
(b) List out the components required for an 11KV pole mounted substations. 8

OR

- X Draw a neat sketch and estimate the materials required for a 11KV/400V, 50Hz, 3 ϕ 200 KVA, 2 pole mounted substation. 15