Total No. of Questions : 4]

SEAT No. :

PE35

[Total No. of Pages : 2

[6579]-336

T.E. (Electrical Engineering) (Insem)

ELECTRICAL INSTALLATION DESIGN AND CONDITION BASED MAINTENANCE

(2019 Pattern) (Semester - I) (303144)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Solve Q1 or Q2, Q3 or Q4.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable additional data, if necesary.***
5) ***Use of non-programmable calculator is allowed.***

Q1) a) What are the types of primary distribution systems? Explain any two types with diagram. **[7]**

b) Derive equation for volume of conductor required for D.C. 2 wire system with midpoint earthed and 1-phase 2 wire system with midpoint earthed with diagram for overhead system. **[8]**

OR

Q2) a) Explain the factors needed to be considered in design of distribution feeders. **[7]**

b) Cost of 3-Phase Overhead transmission line is Rs. (35000a+3500) per KM, where 'a' is cross section of each conductor in CM^2. The line is supplying a load of 6 MW at 33 KV and 0.8 power factor lagging. The average working hours are 20 per day in a year. Energy cost is Rs. 0.05 per KWH and interest & depreciation of 10% per annum. Use Kelvin's law to find the most economical size of the conductor. The specific resistance of conductor material is 10^{-6} Ω-CM. **[8]**

P.T.O.

Q3) a) List the different bus bar arrangements in the substation and explain any one with diagram. **[7]**

b) Explain the following equipments used in the substation with symbol, location in the substation and function. **[8]**

i) Isolator

ii) Current Transformer

iii) Potential Transformer

iv) Lightening Arrester

OR

Q4) a) What are the different methods of testing earth resistance? Explain any one method with suitable diagram. **[7]**

b) Draw and explain plate electrode and pipe electrode system for earthing. **[8]**