Total No. of Questions :8] **SEAT No. :**

P2588 **[Total No. of Pages :2**

[5153] - 564

T.E. (Electrical)

ELECTRICAL INSTALLATION MAINTENANCE & TESTING

(2012 Course) (Semester - I) (303144) (End Semester)

Time : 2½ Hours] ***[Max. Marks :70***

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Explain different maintenance strategies. **[6]**

b) Explain dc test for measurement of insulation resistance. **[7]**

c) Discuss in detail different failure modes fo induction motor. **[7]**

OR

Q2) a) Explain contamination process in transformer oil. **[6]**

b) Discuss in detail various failure modes of transformer. **[7]**

c) Explain the process of condition monitoring of induction motor. **[7]**

Q3) a) Describe the various failure modes of power cables. Also explain various tests conducted on power cables. **[8]**

b) Write short notes on: **[8]**

i) Signature Analysis,

ii) Tan delta measurement.

OR

Q4) a) Write a short note on condition monitoring of power cables. **[8]**

b) What are the various abnormal operating conditions in induction motor and their causes? **[8]**

P.T.O.

Q5) a) What are different types of feeders & distributors? Bring out their relative advantages & disadvantages. **[8]**

b) The cost of single phase overhead feeder is Rs.15A/km ('A' is area of cross section in mm^2) & interest and depreciation charges on feeder are 10%. Determine the most economical current density to use for transmission requiring full load current for 50% of the year. The cost of generating electrical energy is 5 paisa per unit. Assume resistance of 1 km length & $1mm^2$ section of conductor as $(1/58)\Omega$. **[10]**

OR

Q6) a) Compare a 3 phase 3 wire overhead system with a 3 phase 4 wire overhead system for volume of conductor material required. Clearly state the assumptions made. **[8]**

b) A two conductor cable 1 km long is required to supply a constant current of 200A throughout the year. The cost of cable including installation is Rs. (20a+20) per meter where 'a' is the area of cross section of conductor in cm^2. The cost of energy is 5 paisa per unit & interest & depreciation charges are 10%. Calculate the most economical conductor size. Assume resistivity of conductor to be 1.73 $\mu\Omega$-cm. **[10]**

Q7) a) State the various bus bar systems and with neat sketch explain the single bus bar arrangement with sectionalization. **[6]**

b) Explain in detail classification of substation. **[4]**

c) Define estimating & costing. **[6]**

OR

Q8) a) Draw the single line diagram of typical 11 KV outdoor substation. State and explain the various equipments used in the substation. **[6]**

b) Explain the terms: **[4]**

i) Touch potential,

ii) Step potential.

c) How is price list of material is prepared? **[6]**

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