P3697

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T.E. (Electrical)
ELECTRICAL INSTALLATION, MAINTENANCE AND TESTING
(2015 Pattern)

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:
1) *Neat diagrams must be drawn wherever necessary.*
2) *Figures to the right indicate full marks.*
3) *Use of logarithmic tables slide rule, mollier charts, electronic pocket calculator and steam tables is allowed.*

Q1) a) Derive Kelvins law and state its Limitations. **[7]**

b) List out any three symbols of equipment used in substations with their specifications. **[3]**

OR

Q2) a) A Single phase ac distributor AB 500 mt. long is fed from point A and is loaded as: **[6]**

  i) 100A at 0.707 lag power factor at C at distance of 300 mt. from Point A.

  ii) 200A at 0.8 lag power factor at 500 mt. from Point A.

  The power factors at both load points are referred to voltage at point 'C'.

  The Total Impedance of Distributor per km is $(0.2 + j0.1)$ Ω. Calculate total voltage drop in distributor and its Magnitude.

b) Explain Single bus bar system with suitable diagram. **[4]**

Q3) a) Explain Breakdown maintenance of transformers. **[6]**

b) Explain Steps involved in design of substation earthing grid as per IEEE standard 80 – 2000. **[4]**

OR

Q4) a) Explain necessity of earthing in substations. **[4]**

b) Explain following Terms. **[6]**

  i) Polarization Index

  ii) Role of thermography in electrical field

P.T.O.

Q5) a) What is dissolved gas analysis? List out gases generally found in transformer oil. **[6]**

b) List out fault location methods for locating the cable fault and explain any one with diagram **[6]**

c) Explain motor current signature analysis for induction motor. **[6]**

OR

Q6) a) Write short note on following: **[9]**

i) Degree of polymerization

ii) Failure mode of Transformer

iii) Causes of cable failure

b) Draw and explain block diagram of filteration and reconditioning of transformer oil. **[9]**

Q7) Write short note on following: **[16]**

a) Cable Sizing

b) Price Catalogue

c) Labour Rate

d) Schedule of rate

OR

Q8) a) Explain the procedure of installation of underground LT service line.**[8]**

b) State and explain general factors to be considered in estimation of HT and LT Lines. **[8]**

Q9) a) Explain following terms: **[8]**

i) Danger arising as a result of faulty equipments

ii) Contents of first aid box

b) Sate Indian electricity rules of Central Electricity Authority (CEA). **[8]**

OR

*Q10)*a) Classify hazardous areas and how they can be prevented. **[8]**

b) Write any eight objectives of electrical safety. **[8]**

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