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Total No. of Questions : 08

M.Tech. (EE) (2018 & Onwards EL-II)   (Sem.–1)
ELECTRIC POWER DISTRIBUTION SYSTEM
Subject Code : MTEE-104B-18
M.Code : 75222

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWELVE marks.**

I.   a) A 50 MW hydro-generator delivers 320 million kWh during the year. Calculate the plant load factor. 4

   b) Find the daily load factor when the daily energy consumption is 21 GWh and the daily peak demand is 1100 MW. Also, find out the loss factor, average loss and peak hour energy loss. 8

II. a) Differentiate between the three phase balanced primary lines and non-three phase primary lines. 4

   b) Write about the objectives of distribution system protection. Also, explain one example. 8

III. a) Explain the benefits derived through optimal location of substations. 6

   b) Explain the benefits derived from Automatic meter reading. 6

IV. a) Discuss about the line sectionalizer. 4

   b) A 3 Φ, 500 hp, 50 Hz, 11 kV star connected induction motor has a full load efficiency of 85% at lagging p.f of 0.75 and is connected to a feeder. If it is desired to correct the p.f of 0.9 lagging load. Determine : 8

   i)   The size of the capacitor bank in kVAR

   ii) The capacitance of each unit if the capacitors are connected in Y.

V.   Draw the block diagram of SCADA system. Also, describe the various Monitoring and Supervisory functions of SCADA in detail. 4, 8

VI. a) An augmentation of 50% overloaded 100 kVA, 11 /0.433 kV distribution transformer in rural area is made with 200 kVA transformer. Find the annual saving in losses if loss factor is 0.3.   6

   b) Explain Bellman's optimality principle.   6

VII. a) What is the relation of the power factor of induction motor running at rated or at partial load in an industry? How does the large industrial consumer having 0.8 power factor leading affect consumer's own equipment and other consumers connected on the same bus?   6

   b) What are the problems arising in rural distribution in India?   6

VIII. a) Explain by giving examples, the various AI techniques applied to distribution automation system.   8

   b) How does active and reactive power sometime may flow in opposite directions on the same line?   4