Hall Ticket Number:

Code No.: 7201M

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
M.E. I Year (EEE) II-Semester (Make Up) Examinations, Sept./Oct.- 2015
(Power Systems and Power Electronics)

Distribution System Planning and Automation

Time: **3** hours Max. Marks: **70**

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** questions from **Part-B***

Part-A (10 X 2=20 Marks)

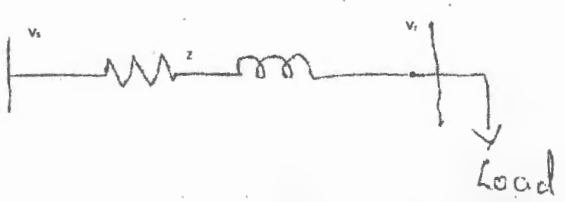
1. Discuss the objective of Distribution System planning.
2. Define coincidence factor.
3. List the components of distribution system.
4. Distinguish between double bus-double breaker scheme and main&transfer bus scheme.
5. Distinguish between feeder and express feeder.
6. Define Tie line and illustrate the functions of Tie line.
7. Discuss the advantages of secondary banking.
8. List the various functions of secondary mains.
9. Explain the necessity and advantages of distribution system automation.
10. Define the functions of SCADA.

Part-B (5 X 10=50 Marks)

11. a) Explain the process of distribution system planning with the help of a block diagram. [7]
    b) Explain the significance of following terms in distribution system [3]
    i) Diversity factor ii) Coincidence factor iii) Load factor

12. a) Sketch single line diagram of double bus double breaker scheme. Enumerate the advantages and disadvantages of the scheme. [5]
    b) Compare the ratings of a square shaped and hexagonal shaped substation service areas of a Distribution substation when the feeders are voltage drop limited. [5]

13. a) Derive an expression for voltage drop and power loss in a feeder with uniformly distributed load. [6]
    b) A radial feeder has an impedance of 0.1+j0.1 pu, the sending end voltage is 1.0pu .P_r is 1.0pu Constant power load, and the power factor at the receiving end is 0.8 lag. Compute V_r and δ. [4]



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14. a) Prove the power loss due to load currents in the conductors of the 2-phase, 3 wire lateral with multi-grounded neutral is approximately 1.64 times larger than the one in the equivalent 3-phase lateral. [7]

    b) A 2.4kV single phase circuit feeds a load of 360kW at a lagging load factor and load current is 200A. If it is desired to improve the power factor, determine the following

    (i) The uncorrected powerfactor

    (ii) The new corrected power factor after installing a shunt capacitor unit with a rating of 300kVAr. [3]

15. a) Explain AMR (Automatic Meter Reading) system. [5]

    b) Explain the objectives of the Distribution Automation. [5]

16. a) Classify the distribution system load modelling. [5]

    b) Describe the use of substation application curves for distribution system planning. [5]

17. Write short notes on any **two** of the following:

    a) Explain the rating of distribution feeders for non-uniform load. [5]

    b) Compare any two types of secondary banking systems used in distribution system. [5]

    c) SCADA system for distribution system. [5]

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