

Code No: RT41029

**R13**

**Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February - 2019

**ELECTRICAL DISTRIBUTION SYSTEMS**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

*Question paper consists of Part-A and Part-B*

*Answer ALL sub questions from Part-A*

*Answer any THREE questions from Part-B*

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**PART-A (22 Marks)**

1. a) Define the terms w.r.t Load characteristics:  
(i) Load Diversity (ii) Contribution factor [4]  
b) Explain the design considerations that are taken for distribution feeders. [3]  
c) How do you fix the rating of a Distribution system? [4]  
d) Explain in brief the type of common faults that occur in Distribution System. [4]  
e) Explain the need of Switched capacitor in Distribution system. [4]  
f) Explain the use of tap changing transformers. [3]

**PART-B (3x16 = 48 Marks)**

2. a) Explain the different methods for reduction of Distribution system losses. [8]  
b) How do you classify the Loads and give its characteristics? [8]
3. a) List the factors that need to be considered for selecting an ideal location of Substation. [8]  
b) Explain the factors affecting the feeder voltage level. [8]
4. Derive the power Loss equation for Radial feeders with Uniformly distributed Load. [16]
5. a) Discuss in detail about the coordination among the Protective devices used in Distribution system. [8]  
b) A three phase, 11 KV, 30 MVA generator with  $X_3 = 0.06$  PU,  $X_1 = 0.3$  PU and  $X_2 = 0.3$  PU is grounded through a reactance of 0.28 ohms. Calculate the total fault current for a Single line to Ground fault. [8]
6. a) Discuss in detail the procedure for best location of capacitor placement in a Distribution system. [8]  
b) A three phase 400 HP, 50 Hz, 11 KV star connected Induction motor has a full load efficiency of 88% at lagging power factor of 0.78 and is connected to a feeder. If it is desired to correct the power factor of 0.92 lagging load, determine i) the size of the capacitor bank in KVAR ii) the capacitance of each unit if the capacitors are connected in delta as well as in star. [8]
7. Write short notes on the following:  
a) Effect of Series capacitors on voltage control  
b) Effect of AVB [16]