Code No: **R1642023** **R16** **Set No. 1**

IV B.Tech II Semester Advanced Supplementary Examinations, Aug/Sep - 2022

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 FOUR questions from Part-B

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PART–A *(14 Marks)*

1. a) What is the Significance of Load Factor? [2]
   b) What are the different types of Primary Feeders? [2]
   c) What is the significance of voltage drop and power loss calculations in distribution systems? [3]
   d) What are the various types of Faults in Distribution Systems? [2]
   e) What is the need of Power Factor control in Distribution systems? [3]
   f) What are the different types of Equipment used for Voltage Control in Distribution Systems? [2]

PART–B *(4x14 = 56 Marks)*

2. a) Derive the relation between Load Factor and Loss Factor neatly with explanation? [7]
   b) The load on a Power plant is as shown is varies per day: [7]

TIME:	12-5 AM	5-9AM	9-6PM	6-10PM	10-12Midnight
Load (MW):	15	45	75	110	30

   Plot Load duration curve and find Load Factor and Average Load and Demand factor. If the rated capacity of the plant is 90MW find Utilization Factor.

3. a) Describe different types of Primary feeders and mention their advantages and disadvantages neatly? [7]
   b) Explain how to Analyze a Substation service area with “n” Primary Feeders with its diagram? [7]

4. a) Derive the Power Loss equation of a Radial Feeder with non-uniformly distributed load? [7]
   b) A 3 phase Radial feeder has a load of 10 MW at 12kV, 0.9 PF lagging, having a total Impedance of (4+j6) ohm/ phase. Find the Sending Line voltage, Load Angle and Voltage Regulation? [7]

5. a) Obtain Sequence impedance equivalent circuit for L-L and L-L-G faults? [7]
   b) Describe the general coordination procedure of protective devices. [7]

6. a) Describe the effect of series capacitor compensation in Distribution Systems with neat diagrams? [7]
   b) A 3 Phase, 400V, 50Hz feeder delivers a load of 150KW at 0.85PF lagging. Find the capacitive reactance value to obtain Unity PF for STAR and DELTA connected systems? [7]

7. a) Explain the operation of AVR with neat diagrams and compare its working with tap changing Transformer? [10]
   b) Describe the effect of line drop compensation in distribution system with diagram. [4]