



SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR

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QUESTION BANK (DESCRIPTIVE)

Subject with Code : Electrical Distribution Systems(16EE229) **Course & Branch:** B.Tech - EEE
Year & Sem: IV-B.Tech & I-Sem **Regulation:** R16

UNIT -I

INTRODUCTION TO DISTRIBUTION SYSTEMS

1. Discuss the relationship between load factor and loss factor? [L4,CO1,CO3,12M]
2. Draw a schematic single line diagram of an electrical distribution system and explain its typical parts in detail. [L3,CO1,12M]
3. A generating station has the following daily load cycle :

Time (Hours)	0—6	6—10	10—12	12—16	16—20	20—24
Load (MW)	40	50	60	50	70	40

 Draw the load curve and find (i) maximum demand (ii) units generated per day (iii) average load and (iv) load factor. [L3,CO1,CO3,12M]
4. Discuss different types of loads present in distribution system and explain their characteristics? [L4,CO1,12M]
5. a) What is Load curve ? what is the importance of load curve? [L1,CO1,6M]
 b) Explain the AC secondary distribution system with diagram. [L1,CO1,6M]
6. A generating station has a maximum demand of 2[L1,CO1,6M]W, a load factor of 60%, a plant capacity factor of 50% and a plant use factor of 72%. Find (i) the reserve capacity of the plant (ii) the daily energy produced and (iii) maximum energy that could be produced daily if the plant while running as per schedule, were fully loaded. [L4,CO1,12M]
7. (a) Define and explain the terms feeder, distributor & service mains with diagram. [L1,CO1,6M]
 (b) Discuss about Diversity factor and Coincidence factor. [L3,CO1,6M]
8. Explain connection schemes of distribution system and give the advantages disadvantages. [L1,CO1,12M]
9. a) Compare overhead and underground distribution systems? [L2,CO1,6M]
 b) Explain the AC secondary distribution system with diagram. [L1,CO1,6M]
10. a) Define Load factor ? [L1,CO1,2M]
 b) What is plant capacity factor? [L1,CO1,2M]
 c) Define Average load and Connected load? [L1,CO1,2M]
 d) Define (i) loss factor (ii) Utilization factor [L1,CO1,2M]
 e) Define Demand factor? [L1,CO1,2M]

UNIT -II
DC AND AC DISTRIBUTION SYSTEMS

1. Compare the advantages disadvantages of DC distribution over AC distribution? [L3,CO4,12M]
2. Derive the expression for power factor referred to receiving end Voltage in A.C. distributor with vector diagram [L3,CO4,12M]
- 3.(a) Derive an expression for the voltage drop for a uniformly loaded distributor fed at one end. [L3,CO4,6M]
(b) What are the advantages of AC distribution? [L1,CO4,6M]
4. A 2 wire DC distributor cable AB is 2 KM long supplies loads of 100A,150A,200A and 50A situated 500m,1000m,1600m and 2000m from the feeding point A. Each conductor has a resistance of 0.01ohm per 1000m.calculate potential difference at each load point if a potential difference of 300V is maintained at point A. [L4,CO4,12M]
5. Derive the expression for Power factors referred to respective load voltages in A.C. distributor with vector diagram. [L3,CO4,12M]
6. A two-wire d.c distributor AB, 600 meters long is loaded as under:
Distance from A (meters): 150 300 350 450
Loads in Amperes : 100 200 250 300
The feeding point A is maintained at 440V and that of B at 430V. If each conductor has a resistance of 0.01Ω per 100 meter, calculate
(i) The current supplied from A to B (ii). The power dissipated in the distributor. [L4,CO4,12M]
7. (a) Explain the AC secondary distribution system with diagram. [L1,CO4,6M]
(b) A single phase distributor 2 kilometers long supplies a load of 120 A at 0.8 p.f. lagging at its far end and a load of 80 A at 0.9 p.f. lagging at its mid-point. Both power factors are referred to the voltage at the far end. The resistance and reactance per km (go and return) are 0.05 Ω and 0.1 Ω respectively. If the voltage at the far end is maintained at 230 V, calculate : (i) Voltage at the sending end
(ii) Phase angle between voltages at the two ends. [L4,CO4,6M]
8. Derive the equations for voltage drops in each section and minimum potential in radial Feeder with uniformly distributed load fed at unequal voltages at both ends. [L3,CO4,12M]
9. A 2-wire d.c. distributor ABCDEA in the form of a ring main is fed at point A at 220 V and is loaded as under : 10A at B ; 20A at C ; 30A at D and 10 A at E. The resistances of various sections (go and return) are : AB = 0.1 Ω ; BC = 0.05 Ω ; CD = 0.01 Ω ; DE = 0.025 Ω and EA = 0.075 Ω. Determine : (i) the point of minimum potential
(ii) current in each section of distributor. [L4,CO4,12M]
10. a) Define the term Feeder?. [L4,CO4,2M]
b) What is a service main in distributed systems? [L4,CO4,2M]
c) Define the term Distributor?. [L4,CO4,2M]
d) Draw the neat sketch of ring main distributed system? [L4,CO4,2M]
e) What are the advantages of ring main distributed system? [L4,CO4,2M]

UNIT -III
SUBSTATIONS

1. (a) Explain the various factors to be considered to decide the ideal location of substation? [L1,CO2,6M]
 (b) Explain how to decide the rating of a distribution a substation? [L1,CO2,6M]
2. a) What is Neutral grounding? What are the advantages of neutral grounding. [L1,CO2,6M]
 b) What are the disadvantages of ungrounded system? [L1,CO2,6M]
3. Draw the layout and schematic connection Pole-Mounted Sub-Station? Give the advantages and disadvantages. [L3,CO2,12M]
4. Explain the classification of Substations? [L1,CO2,12M]
5. What are The equipment required for a transformer sub-station. Explain them? [L2,CO2,12M]
6. Draw the layout and schematic connection Underground Sub-Station? Give the advantages and disadvantages [L3,CO2,12M]
7. Explain different types of bus bar arrangements with neat sketch? And give the advantages Disadvantages. [L1,CO2,12M]
8. a) Explain the Grounded and ungrounded system? [L1,CO2,6M]
 b) Explain Indoor and outdoor substation. [L1,CO2,6M]
9. a) What is solid grounding? What are its advantages and disadvantages solid grounding. [L1,CO1,6M]
 b) What is resistance grounding? What are its advantages and disadvantages? [L1,CO2,6M]
10. a) Define the term Bus-bar. [L1,CO2,2M]
 b) Explain switching substation. [L1,CO2,2M]
 c) Define the term circuit breaker. [L1,CO2,2M]
 d) What do you mean by equipment grounding? [L1,CO2,2M]
 e) Define Substation? [L1,CO2,2M]

UNIT -IV**POWER FACTOR CORRECTION**

1. (a) Define power factor ? explain voltage and current relationship for different loads. [L1,CO2,6M]
(b) Explain Phase advancers. [L1,CO2,6M]
2. A single phase a.c. generator supplies the following loads :
 - (i) Lighting load of 20 kW at unity power factor.
 - (ii) Induction motor load of 100 kW at p.f. 0.707 lagging.
 - (iii) Synchronous motor load of 50 kW at p.f. 0.9 leading.
 Calculate the total kW and kVA delivered by the generator and the power factor at which it works. [L4,CO1,12M]
3. Explain the role of shunt and series capacitors in power factor correction. [L1,CO2,12M]
4. How we can improve the power factor and explain different types of Power Factor Improvement Equipment. [L3,CO2,12M]
5. Explain Most economical power factor for constant KW load & constant KVA type loads? [L4,CO4,12M]
6. (a) Write notes on how an over excited synchronous machine improves power factor? [L1,CO1,6M]
(b) An alternator is supplying a load of 300 kW at a p.f. of 0.6 lagging. If the power factor is raised to unity, how many more kilowatts can alternator supply for the same kVA loading ? [L4,CO4,6M]
7. (a) Explain the effect of shunt compensation on distribution system? [L1,CO2,6M]
(b) How do you justify economically the connection of capacitors for the improvement of p.f ? [L4,CO2,6M]
8. a) Determine the optimum capacitor allocation for improvement of power factor. [L1,CO2,6M]
b) List the various causes of low power factor and explain. [L1,CO4,12M]
9. a) What are the disadvantages of low power factor. [L1,CO4,6M]
b) Explain Static capacitors in power factor improvement. [L1,CO4,6M]
10. a) Define Power factor? [L1,CO4,2M]
b) Discuss the importance of power factor correction. [L1,CO4,2M]
c) What are the disadvantages of low power factor [L1,CO4,2M]
d) What are the advantages of Series compensation? [L1,CO4,2M]
e) What are the advantages of Shunt compensation? [L1,CO4,2M]

UNIT -V
DISTRIBUTION AUTOMATION

1. Explain distribution automation? Give the various functions of distribution automation. [L1,CO2,12M]
2. a) What are the fundamental requirements of communication infrastructure? [L2,CO2,6M]
b) what are the communication methods? [L1,CO2,6M]
3. Explain the distribution system Project planning with diagram. [L3,CO2,12M]
4. a) What are the benefits of distribution automation. [L1,CO2,6M]
b) Explain about Information technology and LAN. [L1,CO2,6M]
5. Explain about Supervisory Control and Data Acquisition? [L1,CO2,12M]
6. Discuss briefly about Consumer Information Service? [L3,CO2,12M]
7. What is geographical information system and explain in brief? [L1,CO2,12M]
8. Explain about Automatic Meter reading in distribution automation? [L1,CO2,12M]
9. Explain the various sensors used in distribution automation? [L1,CO2,12M]
10. a) Define SCADA?. [L1,CO2,2M]
b) What is Modem?. [L1,CO2,2M]
c) What is Router?. [L1,CO2,2M]
d) Define Distribution Automation?. [L1,CO2,2M]
e) Define geographical information system?. [L1,CO2,2M]