



SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR

Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : Electrical Distribution Systems(18EE0219) **Course & Branch:** B.Tech– EEE

Year & Sem: IV-B.Tech& I-Sem.

Regulation: R18

UNIT –I

INTRODUCTION TO DISTRIBUTION SYSTEMS

1. Discuss the relationship between load factor and loss factor? [L2,CO1,10M]
2. Draw a schematic single line diagram of an electrical distribution system and explain its typical parts in detail. [L3,CO1,10M]
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,CO1,10M]
4. Discuss different types of loads present in distribution system and explain their characteristics? [L4,CO1,10M]
5. (a) What is Load curve ? What is the importance of load curve? [L1,CO1,5M]
 (b) Explain the AC secondary distribution system with diagram. [L2,CO1,5M]
6. A generating station has a maximum demand of 2 M 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,CO1,10M]
7. (a) Define and explain the terms feeder, distributor & service mains with diagram. [L2[CO1]][6M]
 (b) Discuss about Diversity factor and Coincidence factor. [L3,CO1,5M]
8. Explain connection schemes of distribution system and give the advantages disadvantages. [L1,CO1,10M]
9. (a). Compare Overhead and Underground distribution systems? [L2,CO1,5M]
 (b). Explain the AC secondary distribution system with diagram. [L1,CO1,5M]
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
AC AND DC DISTRIBUTION SYSTEMS

1. Compare the advantages disadvantages of DC distribution over AC distribution? [L3,CO2,10M]
2. Derive the expression for power factor referred to receiving end Voltage in A.C. distributor with vector diagram [L3,CO2,10M]
3. (a) Derive an expression for the voltage drop for a uniformly loaded distributor fed at one end. [L3,CO2,5M]
(b) What are the advantages of AC distribution? [L1,CO2,5M]
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,CO2,10M]
5. Derive the expression for Power factors referred to respective load voltages in A.C. distributor with vector diagram. [L3,CO2,10M]
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,CO2,10M]
7. (a) Explain the AC secondary distribution system with diagram. [L2,CO2,5M]
(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 0.05Ω and 0.1Ω 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,CO2,5M]
8. (a) 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,CO2,6M]
(b) What are disadvantages of AC distribution system? [L3,CO2,4M]
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 : $AB = 0.1\Omega$; $BC = 0.05\Omega$; $CD = 0.01\Omega$; $DE = 0.025\Omega$ and $EA = 0.075\Omega$. Determine : (i) the point of minimum potential
(ii) current in each section of distributor. [L4,CO2,10M]
10. a) Define the term Feeder?. [L1,CO2,2M]
 b) What is a service main in distributed systems? [L1,CO2,2M]
 c) Define the term Distributor?. [L1,CO2,2M]
 d) Draw the neat sketch of ring main distributed system? [L4,CO2,2M]
 e) What are the advantages of ring main distributed system? [L1,CO2,2M]

UNIT – III
SUBSTATIONS

1. (a) Explain the various factors to be considered to decide the ideal location of substation? [L2,CO3,5M]
(b) Explain how to decide the rating of a distribution a substation? [L2,CO3,5M]
2. a) What is Neutral grounding? What are the advantages of neutral grounding. [L1,CO3,5M]
b) What are the disadvantages of ungrounded system? [L1,CO3,5M]
3. Draw the layout and schematic connection Pole-Mounted Sub-Station? Give the advantages and Disadvantages. [L3,CO3,10M]
4. Explain the classification of Substations? [L2,CO3,10M]
5. What are The equipment required for a transformer sub-station. Explain them? [L1,CO3,10M]
6. Draw the layout and schematic connection Underground Sub-Station? Give the advantages and disadvantages. [L3,CO3,10M]
7. Explain different types of bus bar arrangements with neat sketch? And give the advantages Disadvantages. [L2,CO3,10M]
8. a) Explain the Grounded and ungrounded system? [L2,CO3,5M]
b) Explain Indoor and outdoor substation. [L1,CO3,5M]
9. a) What is solid grounding? What are its advantages and disadvantages solid grounding. [L1,CO3,5M]
b) What is resistance grounding? What are its advantages and disadvantages? [L1,CO3,5M]
10. a) Define the term Bus-bar. [L1,CO3,2M]
b) Explain switching substation. [L2,CO3,2M]
c) Define the term circuit breaker. [L1,CO3,2M]
d) What do you mean by equipment grounding? [L1,CO3,2M]
e) Define Substation? [L1,CO3,2M]

UNIT –IV
POWER FACTOR CORRECTION

1. (a) Define power factor ? Why the improvement of power factor is very important for both consumers and generating stations? [L1,CO4,5M]
(b) Explain Phase advancers. [L2,CO4,5M]
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,CO4,10M]
3. Explain the role of shunt and series capacitors in power factor correction. [L2,CO4,10M]
4. How we can improve the power factor and explain different types of Power Factor Improvement Equipment. [L3,CO4,10M]
5. Explain Most economical power factor for constant KW load & constant KVA type loads? [L4,CO4,10M]
6. (a) Write Short notes on how an over excited synchronous machine improves power factor? [L1,CO4,5M]
(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,CO4,5M]
7. (a) Explain the effect of shunt compensation on distribution system? [L2,CO4,5M]
(b) How do you justify economically the connection of capacitors for the improvement of P.F ? [L4,CO4,5M]
8. a) Determine the optimum capacitor allocation for improvement of power factor. [L1,CO4,5M]
b) List the various causes of low power factor and explain. [L1,CO4,10M]
9. a) What are the disadvantages of low power factor. [L1,CO4,5M]
b) Explain Static capacitors in power factor improvement. [L2,CO4,5M]
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. [L2,CO5,10M]
2. a) What are the fundamental requirements of communication infrastructure? [L1,CO5,5M]
b) what are the communication methods? [L1,CO5,5M]
3. Explain the distribution system Project planning with diagram. [L3,CO5,10M]
4. a) What are the benefits of distribution automation. [L1,CO5,5M]
b) Explain about Information technology and LAN. [L2,CO5,5M]
5. Explain about Supervisory Control and Data Acquisition? [L2,CO5,10M]
6. Discuss briefly about Consumer Information Service? [L3,CO6,10M]
7. What is geographical information system and explain in brief? [L1,CO6,10M]
8. Explain about Automatic Meter reading in distribution automation? [L2,CO6,10M]
9. Explain the various sensors used in distribution automation? [L2,CO5,10M]
10. a) Define SCADA?. [L1,CO5,2M]
b) What is Modem?. [L1,CO5,2M]
c) What is Router?. [L1,CO5,2M]
d) Define Distribution Automation?. [L1,CO5,2M]
e) Define geographical information system?. [L1,CO6,2M]

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UNIT –I
INTRODUCTION TO DISTRIBUTION SYSTEMS

1. The common voltage adopted for low voltage electrical distribution is _____ []
 - A) 220v DC
 - B) 230v AC 1ph
 - C) 400 3ph 3 wire
 - D) 400 3ph 4 wire
2. The usual voltage level adopted for high voltage distribution network in Indian is []
 - A) 132kv
 - B) 11kv
 - C) 16kv
 - D) 400v
3. Demand factor is the ratio of []
 - A) max demand to connected load
 - B) total load to max demand
 - C) max demand to rated capacity
 - D) none of the above
4. The coincidences factor for lighting loads in domestic/residential loads is about []
 - A) 0.1
 - B) 0.5
 - C) 1.0
 - D) 0.9
5. Buller and Woodrow developed an approximate formula to relate the loss factor to the load factor as..... []
 - A) $F_{LS} = F_{LD}$
 - B) $F_{LS} = 0.3F_{LD} + 0.8F_{LD}$
 - C) $F_{LS} = 0.25F_{LD} + 0.7F_{LD}$
 - D) $F_{LS} = 0.3F_{LD} + 0.7F_{LD}$
6. The estimation of load in advance is commonly known as..... []
 - A) load approach
 - B) load forecasting
 - C) both a and b
 - D) none
7. The values of load model can be written as $P = P_0 \left(\frac{V}{V_0} \right) K_1$, $Q = Q_0 \left(\frac{V}{V_0} \right) K_2$. In this, the values of K_1 and K_2 for constant impedance are []
 - A) 1, 1
 - B) 1, 3
 - C) 2, 2
 - D) 2, 0
8. Load duration curve is between []
 - A) load and time duration over which it occurs
 - B) load and time of occurrence
 - C) units consumed and duration in days
 - D) power supplied and time
9. For commercial loads, the diversity factor is usually..... []
 - A) 1.3 – 1.5
 - B) 1.1 – 1.2
 - C) 2 – 4
 - D) 3.2 – 3.5

10. The load factor of agriculture load is generally..... []
 A) 25 – 30% B) 10 – 15%
 C) 20 – 25% D) 70 – 80%
11. Load factor of a power station is defined as []
 A) maximum demand/average load B) average load x maximum demand
 C) average load/maximum demand D) (average load x maximum demand)¹⁷²
12. Load factor of a power station is generally []
 A) equal to unity B) less than unity
 C) more than unity D) equal to zero Diversity factor is always
13. The load factor of domestic load is usually []
 A) 10 to 15% B) 30 to 40%
 C) 50 to 60% D) 60 to 70%
14. Demand factor is defined as []
 A) average load/maximum load B) maximum demand/connected load
 C) connected load/maximum demand D) average load x maximum load
15. High load factor indicates []
 A) cost of generation per unit power is increased
 B) total plant capacity is utilised for most of the time
 C) total plant capacity is not properly utilised for most of the time
 D) none of the above
16. A load curve indicates []
 A) average power used during the period
 B) average kWh (kW) energy consumption during the period
 C) either of the above D) none of the above
17. Which plant can never have 100 percent load factor ? []
 A) Peak load plant B) Base load plant
 C) Nuclear power plant D) Hydro electric plant
18. The area under a load curve gives []
 A) average demand B) energy consumed
 C) maximum demand D) none of the above
19. Diversity factor has direct effect on the []
 A) fixed cost of unit generated B) running cost of unit generated
 C) both (a) and (b) D) neither (a) nor (b)
20. Power plant having maximum demand more than the installed rated capacity will have Utilization factor []
 A) equal to unity B) less than unity
 C) more than unity D) none of the above
21. Load curve of a power plant has always []
 A) zero slope B) positive slope
 C) negative slope D) any combination of (a), (b) and (c)
22. Load curve helps in deciding []
 A) total installed capacity of the plant B) sizes of the generating units
 C) operating schedule of generating units D) all of the above

23. In a power plant if the maximum demand on the plant is equal to the plant capacity, then []
 A) plant reserve capacity will be zero B) diversity factor will be unity
 C) load factor will be unity D) load factor will be nearly 60%
24. Generators for peak load plants are usually designed for maximum efficiency at []
 A) 25 to 50 percent full load B) 50 to 75 percent full load
 C) full load D) 25 percent overload
25. The knowledge of diversity factor helps in determining []
 A) plant capacity B) average load
 C) peak load D) kWh generated
26. An industrial consumer has a daily load pattern of 2000 KW, 0.8 lag for 12 Hrs and 1000 kW UPF for 12 Hrs. The load factor is = _____. * []
 A) 0.5 B) 0.75
 C) 0.6 D) 2.0
27. What is the maximum value of a load which consumes 500 kWh per day at a load factor of 0.40, if the consumer increases the load factor to 0.50 without increasing the maximum demand []
 A) 52.08 kW B) 50.8 kW
 C) 4.5 kW D) 60 kW
28. A consumer consumes 600 kWh per day at a load factor of 0.40. If the consumer increases the load factor to 0.70 without increasing the maximum demand, what is the consumption of energy in kWh []
 A) 950 kWh B) 1000 kWh
 C) 1050 kWh D) 1100 kWh
29. The yearly load duration curve of a power plant is a straight line. The maximum load is 750 MW and the minimum load is 600 MW. The capacity of the plant is 900 MW. What is the capacity factor and utilization factor? []
 A) 0.56, 0.80 B) 0.83, 0.75
 C) 0.78, 0.9 D) 0.75, 0.83
30. What is the utilization factor of a power station which supplies the following loads?
 Load A: Motor load of 200 kW between 10 AM to 7 PM
 Load B: Lighting load of 100 kW between 7 PM to 11 PM
 Load C: Pumping load of 110 kW between 3 PM to 10 AM []
 A) 1.60 B) 1.00
 C) 1.32 D) 2.56
31. A power station supplies the peak load of 60 MW, 40 MW and 70 MW to three localities. The annual load factor is 0.50 p.u. and the diversity factor of the load at the station is 1.55. The maximum demand on the station and average load respectively will be []
 A) 120 MW, 60.8 B) 90 MW, 50.6
 C) 103.2 MW, 51.61 D) 100 MW, 0.51
32. A generating station has a maximum demand of 50 MW, a load factor of 60%, a plant capacity factor of 45% and if the plant while running as per schedule, were fully loaded. The daily energy produced will be []
 A) 400 MW B) 720 MW
 C) 500 MW D) 600 MW

33. A generating station has a maximum, demand of 20 MW, load factor of 60%, a plant capacity factor of 50% and a plant Use factor of 72%. What is the reserve capacity of the plant, if the plant, while running as per schedule, were fully loaded? []
A) 10 MW B) 15 MW
C) 2 MW D) 5 MW
34. A low utilization factor for a plant indicates that []
A) plant is used for stand by purpose only B) plant is under maintenance
C) plant is used for base load only D) plant is used for peak load as well as base load
35. The increased load during summer months is due to []
A) increased business activity B) increased water supply
C) increased use of fans and air conditioners D) none of the above
36. Most efficient plants are normally used as []
A) peak load plants B) base load plants
C) either (a) or (b) D) none of the above
37. In a load curve the highest point represents []
A) peak demand B) average demand
C) diversified demand D) none of the above
38. In India production and distribution of electrical energy is confined to []
A) private sector B) public sector
C) government sector D) joint sector
39. When the demand of consumers is not met by a power plant, it will resort to which of the following []
A) Load shedding B) Power factor improvement at the generators
C) Penalising high load consumers by increasing the charges for electricity
D) Efficient plant operation
40. In power plants insurance cover is provided for which of the following []
A) Unskilled workers only B) Skilled workers only
C) Equipment only D) All of the above

UNIT –II

AC AND DC DISTRIBUTION SYSTEMS

1. A Ring main distributor fed at one end is equivalent to ----- fed at both ends with equal voltages. []
A) Straight distributor B) Strong distributor
C) Balancer D) none of the above
2. A distributor is designed from ----- considerations. []
A) current flow B) Voltage drop
C) power D) none of the above
3. The point of minimum potential of a uniformly loaded distributor fed at both ends with equal voltages will occur at ----- []
A) start point B) mid point
C) end point D) none of the above.
4. The d.c interconnector is used..... The voltage drops in the various sections of the distributor. []
A) to reduce B) to increase

- C) not change
D) none of the above
5. In a 3 wire d.c system, the load on +ve side is 400A and on negative side it is 300A. Then current in neutral wire is ----- []
A) 200A
B) 300A
C) 100A
D) 50A
6. In a balanced 3-wire d.c system, the potential of neutral is between that of outers []
A) starting
B) mid-way
C) end-way
D) none of the above
7. A booster is used tovoltage drop in feeders etc, []
A) compensate
B) not control
C) no compensate
D) none of the above
8. Balancer se is used to maintain voltage on the two sides of the neutral []
A) higher
B)equal to each other
C) lower
D) none of the above
9. In a balanced 3-wire d.c system, if voltage across the outers is 500V, then voltage between any outer and neutral is ----- []
A) 300V
B) 500V
C) 440V
D) 250V
10. A booster is connected in ----- with the feeder. []
A) series
B) parallel
C) both
D) none of the above
11. The single phase H.T distribution for agricultural and rural loads is []
A) 230v
B) $\frac{11}{\sqrt{3}} kv$
C) 3.3kv
D) $\frac{33}{\sqrt{3}} kv$
12. The total power losses In non uniformly distributed load of feeder circuit is []
A) $(8/15)I_s^2 rl$
B) $(8/15)I_s rl$
C) $(8/15)I_s^2 l$
D) none
13. A 400V 3ph 4wire L.T distribution line with uniform load can carry a load of []
A) 50 to 200 KVA
B) 500KVA
C) less than 50 KVA
D) no limit
14. voltage square factor is equal to []
A) $[V_{LN}^{new} / V_{LN}^{old}]^2 * \text{Length ratio} * \text{Load ratio}$
B) $[V_{LN}^{new} / V_{LN}^{old}]^2 * \text{Length} * \text{Load}$
C) $[V_{LN}^{new} / V_{LN}^{old}] * \text{Length ratio} * \text{Load ratio}$
D) $[V_{LN}^{new} / V_{LN}^{old}]^3 * \text{Length ratio} * \text{Load ratio}$
15. The percentage of voltage drop, the length of feeder and loading are direct functions of feeder voltage levels. This relation is known as []
A) voltage triple factor
B) voltage single factor
C) voltage square factor
D) none
16. line losses in 3 phase system are equal to []
A) $(\sqrt{3} * \sigma p l P) / (V \cos\phi)$
B) $(\sqrt{3} * \sigma p l P) / (V^2 \cos\phi)$
C) $(\sqrt{3} * \sigma l P) / (V \cos\phi)$
D) none

17. For radial factor with uniformly distributed load, $\sum V_{DX}$ is []
A) $1/2 z I_s$ B) $2/3 \ell I_s z$
C) $1/2 \ell I_s z$ D) $1/3 \ell I_s z$
18. The total copper loss per phase in the main due to I^2R losses for uniformly distributed load is []
A) $1/2 I_s^2 r \ell$ B) $3/4 I_s^2 r \ell$
C) $1/3 I_s^2 r \ell$ D) $2/3 I_s^2 r \ell$
19. The advantages of radial system are []
A) lower cost B) easy planning, design
C) maintenance D) all of the above
20. The reliability and the quality of service of the network type distribution arrangement are..... the radial and loop arrangements. []
A) less than B) higher than
C) equal to D) none.
21. In a singly fed distributor, if fault occurs on any section, the supply to all consumers has to be []
A) Same B) disconnected
C) Shot circuited D) earthed
22. The voltage drop in a doubly fed distributor is ----- than the equivalent singly fed distributor. []
A) Same B) doubled
C) Half D) more
23. In a 3-wire system, the area of X-section of neutral is generally ----- of either outer. []
A) Same B) doubled
C) Half D) more
24. The point of minimum potential for a uniformly distributor fed at one end is at []
A) The far end B) a point between the far end and the middle
C) A point between the feeding end and the middle D) the middle
25. The voltage must commonly used for the primary distributor is []
A) 400V B) 11KV
C) 132KV D) 230V
26. A uniformly loaded DC distribution is fed at both ends with equal voltage. As compared to a similar distributor fed at one end only the drop at the middle point is. []
A) One - fourth B) One – third
C) One - half D) twice
27. In a 3-phase, 4- wire AC Supply system, if the loads are balanced, then current in the neutral wire is ----- []
A) More B) Zero
C) Less D) None of the above
28. A 3-phase 4 – wire system is commonly used on []
A) Primary transformer B) Secondary transformer
C) Primary distribution D) Secondary distribution

UNIT -III
SUBSTATIONS

1. Isolator switch in a substation is used for []
 - A) disconnecting supply under fault condition
 - B) connecting the equipment and disconnecting
 - C) operating the switch only on load conditions
 - D) none of the above
2. Repts introducing constant K which can be defined as []
 - A) Percent voltage drop
 - B) Percentage voltage drop per kilo volt ampere mile
 - C) Percentage voltage drop per mile
 - D) none
3. If voltage drop limited feeder circuits are maintained, the relationship between TA_6 And TA_4 is []
 - A) $TA_6 = 1.25 TA_4$
 - B) $TA_6 = 1.5 TA_4$
 - C) $TA_6 = TA_4$
 - D) none
4. If thermally limited feeder circuits are maintained, the relationship between TA_6 And TA_4 is []
 - A) $TA_6 = 1.25 TA_4$
 - B) $TA_6 = 1.5 TA_4$
 - C) $TA_6 = TA_4$
 - D) none
5. The percentage voltage drop at $(2/3)l_n$ distance in substation service area with n primary feeders is []
 - A) $\%VD_n = (2/3) l_n^3 KD \tan\theta$
 - B) $\%VD_n = (2/3) l_n^2 KD \tan\theta$
 - C) $\%VD_n = (2/3) \tan\theta$
 - D) none
6. The substation is to be located near to the load center, to minimize..... []
 - A) time and distance for further increase in load
 - B) cost of conductors
 - C) both a and b
 - D) none
7. The rating of the distribution substation depends upon..... []
 - A) load density of the service area
 - B) no. of feeders
 - C) both a and b
 - D) none
8. The voltage drop in the primary-feeder main of a square-shaped service area is []
 - A) $2/3 \ell_4 kS_4$
 - B) $0.667 kD \ell_4^3$
 - C) both a and b
 - D) none
9. The percent voltage drop in the main feeder of hexagonally shaped service area is []
 - A) $0.3855 kD \ell_6^3$
 - B) $\frac{2}{3\sqrt{3}} \ell_6^3 kD$
 - C) $2/3 \ell_6 k S_6$
 - D) All
10. Which is the first equipment seen in substation while coming from transmission system[]
 - A) Circuit breaker
 - B) Lightning arrester
 - C) Current transformer
 - D) Transformer
11. Gas Insulated Substation is employed where: []
 - A) Where there is less space available
 - B) For high altitude substations
 - C) In terrain region
 - D) All the above
12. A bus coupler circuit breaker is utilized in a substation for: []
 - A) Joining the transmission line with station bus-bar
 - B) Joining main and transfer bus in a substation

- C) Joining the generator with transfer
D) Joining the neutral of the generator with earth
13. Which of the gas is used in gas insulated substation: []
A) Nitrogen + SF6 B) Hydrogen + SF6
C) SF6 D) None of the above
14. Which of the following bus-bars arrangement is more reliable and flexible: []
A) Main and transfer bus scheme B) One-and-half breaker scheme
C) Double main busbar scheme D) Single busbar scheme
15. What is the maximum transmission voltage substation in India: []
A) 400 Kv B) 500 Kv
C) 750 kV D) 1000 Kv
16. A busbar is rated by: []
A) Current only B) Voltage only
C) Current, voltage and frequency D) Current, voltage, frequency and short circuit current
17. In a substation current transformers are used to: []
A) Measuring purpose B) Protection purpose connecting to relays
C) Both (a) and (b) D) None of the above
18. Step potential and Touch potential is associated with: []
A) High voltage transmission B) Earthing of the substation
C) Voltage rise in the substation D) Communication systems
19. It is the minimum clearance required between the live conductors and maintenance operators limit: []
A) Ground clearance B) Phase clearance
C) Sectional clearance D) None of the above
20. In a single bus-bar system there will be complete shut down when []
A) fault occurs on the bus itself B) fault occurs on neutral line
C) two or more faults occur simultaneously D) fault occurs with respect to earthing
21. A fuse is connected []
A) in series with circuit B) in parallel with circuit
C) either in series or in parallel with circuit D) none of the above
22. H.R.C. fuse, as compared to a rewirable fuse, has []
A) no ageing effect B) high speed of operation
C) high rupturing capacity D) all of the above
23. The fuse rating is expressed in terms of []
A) current B) voltage
C) VAR D) Kva
24. The fuse blows off by []
A) burning B) arcing
C) melting D) none of the above
25. On which of the following effects of electric current a fuse operates []
A) Photoelectric effect B) Electrostatic effect
C) Heating effect D) Magnetic effect
26. An isolator is installed []
A) to operate the relay of circuit breaker B) as a substitute for circuit breaker

- C) always independent of the position of circuit breaker
- D) generally on both sides of a circuit breaker
- 27. A fuse in a motor circuit provides protection against []
 - A) overload
 - B) short-circuit and overload
 - C) open circuit, short-circuit and overload
 - D) none of the above
- 28. Protection by fuses is generally not used beyond []
 - A) 20 A
 - B) 50 A
 - C) 100 A
 - D) 200 A
- 29. A fuse is never inserted in []
 - A) neutral wire
 - B) negative of D.C. circuit
 - C) positive of D.C. circuit
 - D) phase dine
- 30. Oil switches are employed for []
 - A) low currents circuits
 - B) low voltages circuits
 - C) high voltages and large currents circuits
 - D) all circuits
- 31. switchgear is device used for []
 - A) interrupting an electrical circuit
 - B) switching an electrical circuit
 - C) switching and controlling an electrical circuit
 - D) switching, controlling and protecting the electrical circuit and equipment
- 32. The fuse wire, in D.C. circuits, is inserted in []
 - A) negative circuit only
 - B) positive circuit only
 - C) both (a) and (b)
 - D) either (a) or (b)
- 33. By which of the following methods major portion of the heat generated in a H.R.C. fuse is dissipated ? []
 - A) Radiation
 - B) Convection
 - C) Conduction
 - D) All of the above
- 34. A short-circuit is identified by []
 - A) no current flow
 - B) heavy current flow
 - C) voltage drop
 - D) voltage rise
- 35. The information to the circuit breaker under fault conditions is provided by []
 - A) relay
 - B) rewirable fuse
 - C) H.R.C. only
 - D) all of the above
- 36. To limit short-circuit current in a power system are used. []
 - A) earth wires
 - B) isolators
 - C) H.R.C. fuses
 - D) reactors
- 37. The The current , the Is the time taken by the fuse to blow out []
 - A) low, least
 - B) greater, smaller
 - C) Smaller. Greater
 - D) greater, greater
- 38. The auto recloser must sensefault current at the end of the section controlled by the sectionalizer. []
 - A) minimum
 - B) maximum
 - C) Medium
 - D) all of the above
- 39. The advantage of the fuse is []
 - A) Break low short circuit without noise or smoke
 - B) Break heavy short circuit without noise or smoke

- C) Break heavy short circuit with noise or smoke
D) none of the above
40. advantage of fuse is thetime of operation can be made much shorter than that of the circuit breaker. []
- A) maximum B) medium
C) Minimum D) none of the above

UNIT -IV
POWER FACTOR IMPROVEMENT

1. The voltage of the alternator can be kept constant by changing the field current of the alternator in accordance with the load. This is known asmethod. []
- A) excitation control B) By using tap changing transformers
C) Induction regulators D) none of the above
2. In excitation control, types of automatic voltage regulators are []
- A) Tirril Regulator B) Brown Boveri Regulator
C) Induction regulators D) both (a) and (b).
3. Power factor can be improved by installing such a device in parallel with load which takes..... []
- A) lagging reactive power B) leading reactive power
C) Both (a) and (b) D) none of the above
4. The excitation control method is suitable only forlines. []
- A) short B) long
C) Medium D) none of above
5. In a Tirril regulator, a is cut in and out of the exciter field circuit of the alternator. []
- A) capacitance regulating B) Inductance regulating
C) Regulating resistance D) none of the above
6. Induction regulators are used for voltage control insystem. []
- A) generating station B) primary distribution
C) Secondary distribution D) none of the above
7. The secondary of the booster transformer is connected in with the line whose voltage is to be controlled. []
- A) series B) shunt
C) Series and shunt D) none of the above
8. The statutory limit of voltage variation is of the declared voltage at consumer's terminals. []
- (a). $\pm 6\%$ (b). $\pm 1\%$ (c). $\pm 12\%$ (d). $\pm 14\%$
9. The voltage control equipment is used at -----in the power system ... []
- A) One point B) two point
C) Three point D)four point

10. Which is not tap changing transformer voltage control method. []
 A) Booster transformer method B) Induction regulator
 C) Off load tap changing transformer D) both (a) and (b).
11. VD% for under ground cables is estimated []
 A) same as over head lines B) cable capacitance and line charging current is to be taken
 B) only reactance of cable is considered D) cable is taken as capacitor
12. In case of un balanced 3ph 4wire system % VD is []
 A) same as in case of 3ph balanced system B) it should estimated for each phase
 B) not possible to estimate D) to be solved as a network problem
13. Single phase AC distribution with mid point ground is used for []
 A) rural low voltage systems B) agricultural loads
 B) urban street lights D) all of the above
14. Stranded 3phase 4wire LT distribution in India is []
 A) 230v 3ph B) 400v 3ph
 B) 11kv 3ph D) 3.3kv 3ph
15. In a 3wire DC distribution system, the ground point is []
 A) positive pole B) negative pole
 B) mid point D) none of the above
16. The voltage drop in the three-phase lateral can be expressed as []
 A) $VD_{3\phi} = I_{3\phi} (R \cos \theta + x \sin \theta)$ B) $VD_{3\phi} = I_{3\phi} (R \sin \theta + x \cos \theta)$
 C) $VD_{3\phi} = I_{3\phi} (R \cos \theta - x \sin \theta)$ D) $VD_{3\phi} = I_{3\phi} (R \sin \theta - x \cos \theta)$
17. The power loss due to the load currents in the conductors of the single-phase lateral is..... times larger than the one in the equivalent three-phase lateral. []
 A) 1/2 B) 2
 C) 2/3 D) 3
18. The power loss due to load currents in the conductors of the single-phase two-wire ungrounded lateral with full-capacity neutral is.....times larger than the one in the equivalent 3-ph, 4-wire neutral. []
 A) 2 B) 4
 C) 6 D) 3
19. In single phase two-wire laterals with multi-grounded common neutrals, according to Morrison, the return current in the neutral wire is []
 A) $I_n = \zeta_1 I_a$ B) $I_n = \zeta_1 \frac{I_a}{2}$
 C) $I_n = 0.5 \zeta_1 I_a$ D) both b and c
20. Single-phase, two-wire ungrounded laterals system is not used due to..... []
 A) there is no earth current B) power loss is very much larger than 3-ph, 4-wire lateral
 C) both a and b D) either a or b
21. The power factor improved by using []
 A) capacitors B) reactors
 C) Resistors D) none of the above

22. An over-excited synchronous motor running on no-load is known as ... []
 A) alternator
 B) induction motor
 C) synchronous condenser
 D) none of the above
23. The value to which the power factor should be improved so as to have maximum net annual saving is known as []
 A) most economical power factor
 B) consumer factor
 C) Load factor
 D) none of the above
24. The power factor of an ac circuit is given by Power divided bypower []
 A) reactive , apparent
 B) active , apparent
 C) active , real
 D) none of the above
25. Power factor can be improved by installing such a device in parallel with load which takes..... []
 A) lagging reactive power
 B) leading reactive power
 C) Both (a) and (b)
 D) none of the above
26. The major reason for low lagging power factor of supply system is due to the use ofmotors []
 A) Induction
 B) alternators
 C) synchronous motors
 D) none of the above
27. The maximum value of power factor can be []
 A) 0.5
 B) 0.9
 C) 0.7
 D) 1
28. The most economical powerfactor for a consumer is generally..... []
 A) 0.9
 B) 0.95
 C) 1
 D) 0.7
29. disadvantages of low power factor maintained on distribution is []
 A) larger copper losses
 B) poor voltage regulation
 C) Reduced handling capacity of system
 D) all of the above
30. Advantages of Economic justification of capacitors are []
 A) Reduction in the requirement of the feeder capacity
 B) Improve the voltage profile at loads
 C) Reduction in kVA demand for consumers.
 D) all of the above.
31. Low power factor is usually not due to []
 A) arc lamps
 B) induction motors
 C) fluorescent tubes
 D) incandescent lamp
32. An induction motor has relatively high power factor at []
 A) rated r.p.m.
 B) no load
 C) 20 percent load
 D) near full load
33. By the use of which of the following power factor can be improved []
 A) Phase advancers
 B) Synchronous compensators
 C) Static capacitors
 D) Any of the above
34. Which of the following is the disadvantage due to low power factor []
 A) Poor voltage regulation
 B) Increased transmission losses
 C) High cost of equipment for a given load
 D) All of the above

35. Satic capacitors are rated in terms of []
 A) kW B) kWh
 C) Kvar D) none of the above
36. Which of the following is the disadvantage of a synchronous condenser []
 A) High maintenance cost B) Continuous losses in motor
 C) Noise D) All of the above
37. For a consumer the most economical power factor is generally []
 A) 0.5 lagging B) 0.5 leading
 C) 0.95 lagging D) 0.95 leading
38. A synchronous condenser is virtually which of the following []
 A) Induction motor B) Under excited synchronous motor
 C) Over excited synchronous motor D) D.C. generator
39. Which of the following is an advantage of static capacitor for power factor improvement []
 A) Little maintenance cost B) Ease in installation
 C) Low losses D) All of the above
40. Series capacitive compensation in EHV transmission lines is used to []
 A) reduce the line loading B) improve the stability of the system
 C) reduce the voltage profile D) improve the protection of the line

UNIT –V

DISTRIBUTION AUTOMATION

1. SCADA stands for _____ []
 A) Supervisory Control and Data Acquisition B) Supervisory Common Data Acquisition
 C) Supervisory Control and Demand Acquisition D) Sudden Control and Data Access
2. CIS stands for _____ []
 A) Control interaction service B) Consumer Information Service
 C) Consumer Information System D) Control Information Service
3. GIS stands for _____ []
 A) Geographical Information System B) Graphics interference system
 C) graphical Information System D) Geographical Information System
4. What is the contribution of Agricultural equipments to the peak demand in India? []
 A) 70% B) 75%
 C) 80% D) 85%
5. The annual load growth in India is around []
 A) 5-10% B) 10-12%
 C) 50-60% D) 20-30%
6. AMR stands for _____ []
 A) Automatic Meter Reading B) Automatic Motor Reading
 C) Automatic Meter Recording D) Automatic Motor Recording
7. The use automation and microprocessor based devices helps in []
 A) Improved System Stability B) Quality of Supply
 C) Customer Satisfaction D) All of the above

21. Surge diverter consists of []
A) spark plugs B) non-linear resistors
C) Thermal protection device D) non-linear resistors with spark plugs
22. SCADA is an acronym that stands for Supervisory Control and Data Acquisition []
A) True B) False
C) Not related D) insufficient data
23. SCADA refers to a system that collects data from various sensors at a factory, plant or in other remote locations and then sends this data to a central computer which then manages and controls the data. []
A) True B) False
C) Not related D) insufficient data
24. A SCADA system will include []
A) signal hardware (input and output)controllers B) networks
C) communications equipment and software D) All of the above
25. A SCADA system will only monitor and never make changes to the operations. []
A) True B) False
C) Not related D) insufficient data
26. When planning a SCADA system you should: []
A) Have an understanding of the process B) Design a database
C) Design a secure system D) All of the above
27. Before planning an alarm system within the SCADA one should consider. []
A) What conditions triggers the alarm? B) How operators will be notified of those alarms?
C) What actions will occur in response to those alarms? D) None of the above
28. Every SCADA system is unique to its environment, so there is no need to be consistent with colors, symbols and terminology. []
A) True B) False
C) Not related D) insufficient data
29. A SCADA system is open to many inputs and output, for that reason a SCADA system can not be configured for secure access. []
A) True B) False
C) Not related D) insufficient data
30. A Dynamic Data Exchange (DDE) Server is a program that has access to data and can provide that data to other programs. []
A) True B) False
C) Not related D) insufficient data
31. Which among the components connects two physical equipments of the distribution system []
A) RTU B) Central room computer
C) Communication Infrastructure D) None of the above
32. The function of data acquisition begins at []
A) Communication Infrastructure B) Central room computer
C) RTU D) None of the above
33. In a SCADA system the operator interaction is driven by []
A) Communication Infrastructure B) PLC
C) Alarm D) RTU
34. In a SCADA system the host computer performs []

- A) Data acquisition functions B) Computational tasks
C) Communication D) All of the above
35. Information display is achieved in the form of []
A) Limited graphics B) CRT color pages
C) Both A & B D) None of the above
36. During supervisory control which of the following methods is employed for verification []
A) Set point control B) Report by exception
C) Check before operate D) Sequence of events acquisition
37. Alarm processing refers to which of the following []
A) Acquiring data from the field RTU's B) Set point control of the RTU's
C) Alerting the operator to unscheduled events D) Retrieving real time data
38. Accurate record keeping is essential for []
A) Legal requirements B) Accounting purposes
C) Forecasting purposes D) All of the above
39. The typical time resolution of events captured during a SOE operation would be []
A) 5ms B) 10ms
C) 2ms D) 3ms
40. Which of the following protocols offers a byte stream service []
A) UDP B) TCP
C) RPC D) SNMP

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