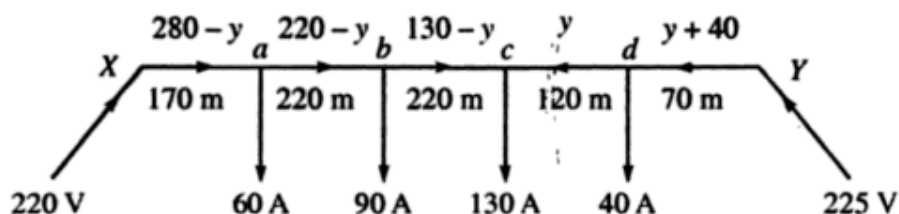# POWER SYSTEMS-II

1. Derive the expression for maximum stress in single core cable with intersheath grading . Explain using neat sketch.
2. A single core lead covered cable is to be designed for 66 kv to earth . its conductor radius is 0.5 cm and its three insulating materials A,B and C have relative permittivity of 4,2.5 and 4.0 with maximum permissible stresses of 50,30 and40 kv/cm respectively. Determine the minimum internal diameter of the lead sheath. Discuss the arrangement of insulating materials.
3. For a overhead line span length is 180m, difference in levels of support is 7m, conductor diameter 2cm, weight per unit length of conductor 2kg and wind pressure of 45 kg/m^2 of projected area . if the maximum tensile strength of the conductor is 4500 kg/cm^2 and safety factor 5, calculate the sag.
4. Derive the sag expression for a transmission line at equal level supports.
5. A string of suspension insulators consists of 5 units each having capacitance C. the capacitance between each unit and earth is 1/8 of C. determine the voltage of conductor to earth. If the insulators in the string are designed to withstand 36 kv maximum, calculate the operating voltage of the line where 5 suspension insulator strings cab be used.
6. Explain about capacitance of a 3-phase belted cable.
7. A single core 11 kv, 50Hz,6 km long cable has a core diameter of 2.2cm and diameter of under sheath 3.0 . the relative permittivity of the insulating material is 3. The power factor on open circuit is0.04. Determine
   i)   He capacitance of the cable
   ii)   Charging per conductor
   iii)   Dielectric loss
   iv)   The equivalent insulation resistance.
8. Discuss the methods of grading cables. Why are they not used generally?
9. A single core 2 km long cable has a conductor radius of 1.3 cm and an insulation thickness of 3.5 mm. if the resistivity of dielectric is 7X1012 ohm-determine the insulation resistance of the cable.
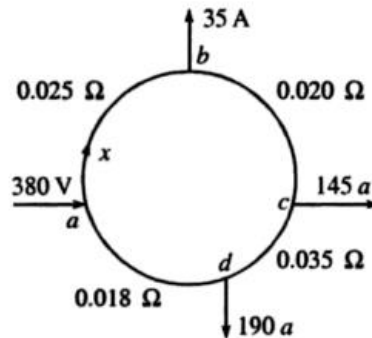
UNIT-II D.C DISTRIBUTION

1. A DC distributor of 800m is loaded as shown in below figure. The both ends X and Y are maintained at 220V and 225 V respectively. If the minimum voltage allowed at consumers end is 215 V find out the diameter of the conductor. The resistivity is 1.72 micro-ohm-cm.

POWER SYSTEMS-II

2. A 2-eire DC ring main is fed at a and at points b, c and d loads are tapped off as shown in figure. Find out the minimum potential and locate the point. The resistances are shown conductors.

1. Discuss about design features of distribution system.
2. A 2-wire dc distributor cable AB is 2km long and supplied loads of 100A, 150A,200A,and 50A situated 500m,1000m,1600m and 2000m from the feeding point A. each conductor has a resistance of 0.01 Ω per 1000m. calculate the voltage at each point if a voltage of 300V is maintained at point A.
3. Compare the advantages and disadvantages of using over-head and under ground distribution systems.
4. A 2-wire distributor fed at F1 and F2 at 230V and 220V respectively. Loads of 130A and 110A are taken at points P and Q . resistance of both the conductors between F1 and P is 0.03 ohm, between P and Q is 0.05 ohms. Determine the current in each section of the distributor and voltage at each load point.

UNIT-III   A.C DISTRIBUTION

1. Below figure shows a single-phase line having resistance and reactance of 0.06 and 0.1 ohm/km. the length of section AB and BC are 1km each. The voltage at the farther end is 220V. find the voltage at sending end and phase angle difference between the voltage of two ends.
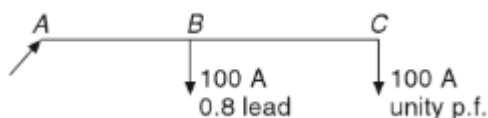
2. Explain any 8 disadvantages of AC distribution system.
3. Draw the schematic diagram of three -phase four -wire ac distribution system.
4. List out merits and demerits of AC Distribution system.
5. A single-phase AC distributor, AB 300 meters long is fed from A and is loaded as follows:
   a) 100 A at 0.707 pf lagging 200 m from point A.
   b) 200 A at 0.8 pf lagging 300 m from point A

   The load resistance and reactance of the distributor is 0.2 ohms and 0.1 ohm per kilometre. calculate the total voltage drop in the distributor. the load power factors refer to the voltage at the far end.

6. Solve the single phase AC distribution system when the power factors of the load currents are referred to receiving end voltage,
7. Explain the following with neat diagrams:

POWER SYSTEMS-II

    i)   AC 3 phase 3 wire distribution system

    ii)   AC 3 phase 4 wire distribution system

UNIT-IV

1. Discuss the double breaker scheme used with double bus-bar using a neat sketch.
2. What is bus-bar? . list its properties and accessories .
3. Explain the arrangement of main and transfer bus-bar arrangements in detail.
4. Draw and explain key diagrams of a typical substation showing location of all equipment.
5. What are the main equipments in a typical 33/11 KV air insulated substation and show them on a line diagram.
6. What are the difference between section sectionalized single busbar and sectionalized double bus bar?
7. Explain about the function of main busbar.
8. What are a bus-bar? List its properties and accessories

UNIT-V COMPENSATION IN POWER SYSTEMS

1. What is a symmetrical line. Obtain the expression for power transmitted over the same.
2. Discuss the compensation by shunt capacitor, series capacitor and synchronous capacitor.
3. Explain about concepts of load compensation .
4. Explain about compensation of lines.