

Exam. of Electrical power
For Third Grade Comm. Dept.

Answer All the Following Questions:-

- Q1- i- Write short notes on " Modern methods for comm. Over power lines" (5)
ii- An OHL with standard copper conductors is supported on two poles 200 m apart having a difference in level of 10 m. The conductor diameter is 2.0 cm and weighs 2.3 kg/m length. Calculate the sag at the lower support under the conditions if wind provides a pressure of $57.5 / m^2$ of the projected area & a factor of safety is 4. The max. tensile strength of copper is 4220 kg/cm^2 . (9)

- Q2- A ring distributor ^{is} supplied through the feeder AB loaded as shown in Fig.1 Calculate: a)cross-section of feeder AB & b)that of distribution for min. volume of copper . Assume that the max. voltage drop from A to the point min. potential is 15 V. $\rho = 1.73 \mu\Omega/\text{cm}^3$. (14)

- Q3- i- A 3-ph OHTL is being supported by three-disc suspensions insulators, the Potentials across the first and second insulator are 8&11 kV res. Calculate (a) the line voltage,(b) the ratio of capacitance between pin and earth to self -capacitance of each unit, (c) the string efficiency. (7)
ii- A 3-ph OHTL ,50 Hz, 160 km length,132 kV, 25 MW total load at 0.8 lag. Power factor. Conductor dia. 10 mm, distance between two conductors 4 m, arranged as in Fig. 2. Calculate induced potential in telephone circuit and Telephone conductor s potential. (7)

- Q4- The equivalent Π of 3-ph TL(Fig.3), which has the following data:
 $\% \mu = 89.94261$; sending end power 16677.3 kW; $Z = 25 + j80 \Omega$;
 $I_1 = j26.674 \text{ A}$. Calculate I ; I_r ; V_r ; Y ; V_s ; I_s & $\% \text{reg}$. (14)

- Q5- A 66 kV, 1 core metal sheathed cable is to be graded by means of a metallic intersheath. Calculate the dia. Of the intersheath and the voltage at which it must be maintained in order to obtain the min. overall cable dia. The max. voltage at which the insulating material can be worked is 60 kV/cm. had the cable been ungraded, what will be the overall dia. of the cable. (14)

مع دعواتي بالتوفيق والنجاح

Prof.Dr. Eng. I.I. Mansy

أنظر في الخلف رسومات المسائل

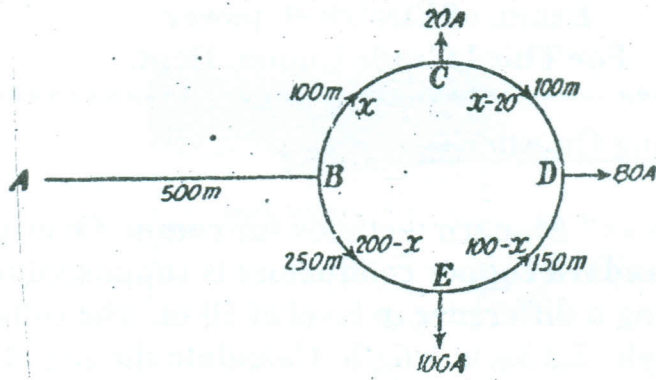


Fig. 1

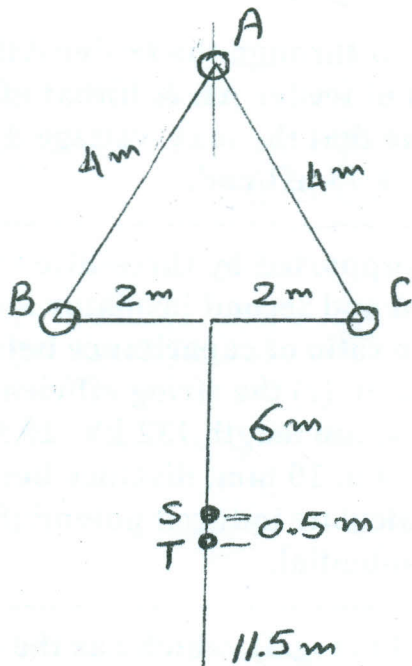
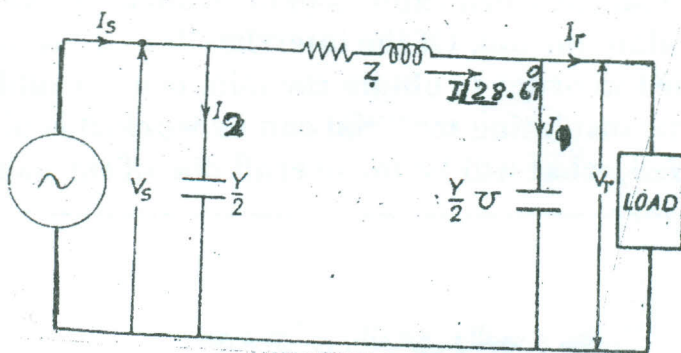


Fig. 2



$$V_r = |V_r| \angle 0^\circ$$

Fig. 3