

- N.B.** 1) Question no 1 is compulsory.
 2) Solve any 3 question from remaining.
 3) Assume data if necessary.

1. (a) What is per unit system state its advantages & disadvantages. **05**
 (b) Compare overhead Vs underground cable system (any 5 points). **05**
 (C) What is insulator? What are its desirable properties? **05**
 (d) What is proximity effect? **05**

2. (a) Calculate sending end voltage, efficiency & regulation of 3 phase 50 Hz 100 km long transmission line supplying a load of 20 MW at 0.8 power factor lagging at 66 kv Resistance/ phase= 10Ω , inductance/phase = 111.7 mH & Capacitance/phase = 0.9954 μF use nominal T method. **10**
 (b) Explain method of images? **10**

3. (a) With general construction explain underground cable. **10**
 (b) Explain the effect of wind & ice loading on sag. **10**

4. (a) Explain power flow through transmission line. **10**
 (b) Explain grading of cable. **10**

5. (a) Derive the expression for capacitance of three phase transmission line with unsymmetrical spacing. **10**
 (b) What is surge impedance loading? Explain in brief. **10**

6. (a) What is string efficiency? Explain method of equalizing potential. **10**
 (b) A split phase, 1 phase transmission line is shown in fig 6.b conductor 1 & 2 in parallel from 1 path while conductor 1' & 2' in parallel with return path current is equally shared by 2 parallel conductors. Determine total inductance per km of transmission line, $r = 1.2 \text{ cm}$. **10**

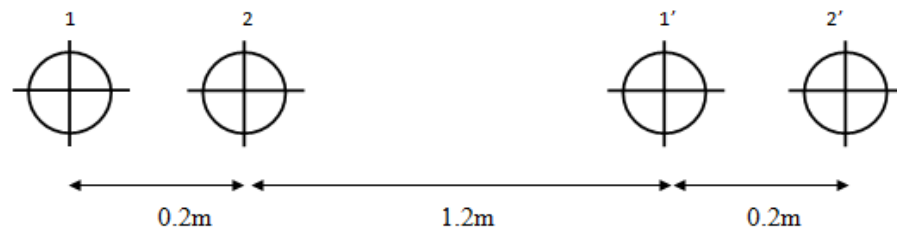


Fig 6.b)