[Time: 3 Hours] **[Marks:80]**

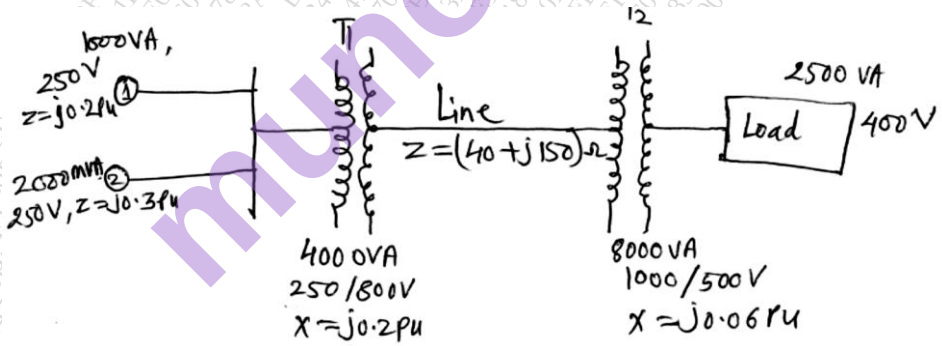
Please check whether you have got the right question paper.

N.B: 1. Questions No.1 is compulsory.
2. Solve three questions from remaining questions.
3. All questions carry equal marks.
4. Assume suitable data if required.

Q.1
a) What is the difference between overhead & underground system. **20**
b) Explain skin effect & proximity effect.
c) Explain transposition of power line
d) Explain step & touch potential.

Q.2
a) What is string efficiency & Derive expression for string efficiency? **20**
b) A 3- phase double circuit line has vertical configuration as radius of each conductor is 1.1 cm. the horizontal distance h is 5 m & Vertical distance D is 3m. Find the inductance per phase per km of line.

Q.3
a) Derive an expression from inductance of 1-phase, 2- wire line with solid conductor .write assumption. **20**
b) For a simple power system shown in below , draw the per unit impedance diagram on a common base of 5000 VA & 250 V.



Q.4
a) Derive an expression for capacitance per phase per km of a 1-phase line taking into account effect of ground. **20**
b) Find A, B, C, D parameters of a 3-phase, 80km, 50 hz transmission line with series impedance of 0.15 + j0.78 ohm/ km & a shunt capacitance of j 5 X 10^{-6} mho/km .use nominal T configuration.

Q.5
a) Prove that per unit impedance of transformer can be made some referred to both winding by selecting proper voltage base in either side. **20**
b) Explain tuned power line.

Q.6 a) Explain the measurement of earth resistance & soil resistivity. **20**

b) Explain the different method of neutral grounding.

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