SE (SE-IV) (BSGS EE -

EPS

80

Q.P. Code : 543600

(3 Hours) [Total Marks : 80

N.B. : (1) Question No.1 is **Compulsory.**
(2) Attempt any **three** questions from remaining **five** questions
(3) Figures to the right indicate **full** marks.
(4) Make suitable assumptions wherever necessary

1. Attempt any **four**. **20**
   (a) Draw single line diagram of a typical ac power supply scheme.
   (b) In a lightly loaded long transmission line, the receiving end voltage is greater than sending end." Justify.
   (c) Write the difference between overhead and underground system.
   (d) Explain Skin effect and Proximity Effect.
   (e) What is per unit system? State its advantages.

2. (a) Derive an expression of Sag for two considerations (i) when supports are at equal ground level and (ii) when supports are at unequal ground level. **10**
   (b) A transmission line has a span of 214m between level supports. The conductors has X sectional area of 3.225cm^2. Calculate the factor of safety under the following conditions. **10**
   Vertical sag = 2.35m; wind pressure =1.5kg/m run, breaking stress = 2540kg/cm^2,wt. of conductor=1.125kg/m

3. (a) Find ABCD constants of medium length transmission line represented by Nominal π model. Also draw phasor diagram. **10**
   (b) A single phase 50 Hz generator supplies an inductive load of 5000 KW at a power factor of 0.707 lagging by means of an overhead transmission line 20km long. The line resistance and inductance is 0.0195 ohm and 0.63mH per km. The voltage at the receiving end is required to be kept constant at 10kV. Find (a) the sending end voltage and voltage regulation of the line; (b) the value ofcapacitor to be placed in parallel with the load such that the regulation is reduced to 50% of that obtained in part (a). **10**

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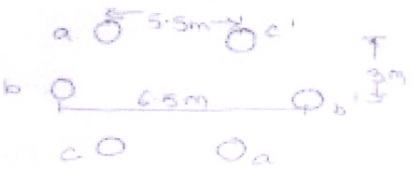
4. (a) Derive Capacitance of 3 phase line with unsymmetrical spacing assume transposition. **10**

(b) Determine the inductance of the double circuit line shown in the diagram. The self GMD of the conductor is 0.0069 meter. **10**



5. (a) Describe different methods to improve string efficiency. **10**

(b) A string insulator has five units each rated for 11kV. Find the maximum line voltage on which it can be operated safely. The mutual capacitance of unit is 10 times the capacitance between pin to earth. **10**

6. Write short notes on any **two**. **20**

(a) Explain Step potential and Touch potential.

(b) Measurement of earth resistance and soil resistivity.

(c) Explain general construction of underground conductor.
