

- (b) A 33 kV single core cable has a conductor diameter of 1 cm and a sheath of inside diameter 4 cm. Find the maximum and minimum stress in the insulation. **10**

8. Write short notes on the following :

- (a) Compare the HVDC and HVAC with merits and demerits.
(b) Ferranti effect and proximity effect.

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Roll No.

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B. Tech. EXAMINATION, Dec. 2018

(Fifth Semester)

(Old Scheme) (Re-appear Only)

(EE)

EE315

POWER SYSTEM-I

Time : 3 Hours]

[Maximum Marks : 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. All questions carry equal marks.

1. (a) Draw the layout and schematic structure of a modern power system. And explain its components. **12**
 (b) Differentiate the indoor and outdoor substation. **8**
2. (a) Differentiate the ring distribution system and radial distribution system. **10**
 (b) Derive an expression for the loop inductance of a single phase two wire line. **10**
3. (a) An overhead 3-phase transmission line delivers 200 kW at 22 kV at 0.8 power factor lag. The resistance and reactance of each conductor is 4 ohm and 6 ohm respectively. Find sending end voltage and percentage regulation. **14**
 (b) Draw and explain the layout and schematic connection of a pole mounted substation. **6**

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4. (a) Discuss the effect of wind and ice loading on sag. **8**
 (b) A suspension string has three units. Each can with stand a maximum voltage of 11 kV. The capacitance of each joint and metal work is 20% of the capacitance of each disc. Find :
 (i) Maximum line voltage for string
 (ii) String efficiency. **12**
5. What is Corona ? Which factors are affected the corona ? Give the merits and demerits of coronas. **20**
6. Explain capacitance grading and derive an expression for voltage in terms of radii and maximum voltage stress. Why grading of cable is necessary ? **20**
7. (a) Derive an expression for an equivalent A, B, C and D parameter for pie-model of a line. **10**

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P.T.O.