

Registration No :

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Total Number of Pages : 02

B.Tech
PCEE4401

7th Semester Back Examination 2018-19
ELECTRICAL POWER TRANSMISSION AND DISTRIBUTION

BRANCH : EEE

Time : 3 Hours

Max Marks : 70

Q.CODE : E529

Answer Question No.1 which is compulsory and any FIVE from the rest.
The figures in the right hand margin indicate marks.

- Q1 Answer the following questions : (2 x 10)**
- a) What is proximity effect?
 - b) Explain surge impedance loading of transmission line?
 - c) Explain Ferranti effect ?
 - d) What are the advantages of Hollow conductors?
 - e) Explain Insulation coordination?
 - f) How the distribution line feeders are designed?
 - g) Why metallic sheath and bedding is provided in Underground cable?
 - h) What is the maximum value of Earth resistance of switchyard in electrical substation?
 - i) Explain step and touch potential?
 - j) Define Dielectric Loss of cable with its expression?
- Q2**
- a) What is the effect of earth on the capacitance of a three phase transmission line, explain briefly? **(5)**
 - b) What is self GMD and mutual GMD for evaluating inductance of transmission lines, explain briefly? **(5)**
- Q3**
- a) Derive the ABCD parameter of short transmission line along with its phasor diagram? **(5)**
 - b) A 3phase 50 Hz transmission line has conductors of section 90mm^2 and effective diameter of 1cm and are placed at the vertices of an equilateral triangle of side 1 meter. The line is 20km long and delivers a load of 10MW at 33kv and pf 0.8. Neglect capacitance and assume temperature of 20°C . Determine the transmission efficiency and voltage regulation of the line. **(5)**
- Q4**
- a) Two insulator discs of identical capacitance value C make up a string for a 22 KV, 50Hz single phase overhead line insulation system. If the pin to earth capacitance is also C then what is the string efficiency? **(5)**
 - b) What do you understand by String efficiency? Describe briefly the methods used to improve it. **(5)**
- Q5**
- a) Explain Kelvin's law for finding economic size of a conductor and also state its limitations? **(5)**
 - b) Prove that volume of copper required for a single phase 2 wire system is more than three phase four wire system? **(5)**

- Q6** a) Explain the design principles of substation grounding principles? **(5)**
b) Explain capacitance grading of cables? **(5)**

Q7 Derive the equation for real and reactive power in terms of ABCD constant of a long transmission line? **(10)**

- Q8** **Write short answer on any TWO :** **(5 x 2)**
a) Advantages of Composite conductors
b) Compensation of transmission line
c) Types of Insulators
d) Earth resistance