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GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, December – 2020

(Fifth Semester)

BEEPC5030 / BELPC 5030 – ELECTRIC POWER TRANSMISSION AND DISTRIBUTION

(EE & EEE)

Time: 2 hrs

Maximum: 50 Marks

The figures in the right hand margin indicate marks.**PART – A: (Multiple Choice Questions)****(1 x 10 = 10 Marks)**Q.1. Answer ALL questions

- a. The self GMD method is used to evaluate
- | | |
|----------------|------------------|
| (i) Inductance | (ii) Capacitance |
| (iii) Both | (iv) None |
- b. The presence of earth in case of overhead lines
- | | |
|---------------------------------|-------------------------------|
| (i) Increase the capacitance | (ii) Increase the Inductance |
| (iii) Decreases the capacitance | (iv) Decreases the Inductance |
- c. Bundled conductors reduce
- | | |
|--|-------------------------------------|
| (i) Surface electric stress of conductor | (ii) Increases the line reactance |
| (iii) Decreases the line capacitance | (iv) Voltage gradient and reactance |
- d. In short transmission lines the effect of Is negligible
- | | |
|----------------|------------------|
| (i) Inductance | (ii) Capacitance |
| (iii) Both | (iv) None |
- e. The inductance of a 1-phase two-wire line is given by
- | | |
|---------------------------|---------------------------|
| (i) $0.4 \ln D/r$ mH/km | (ii) $0.55 \ln D/r$ mH/km |
| (iii) $0.4 \ln r/D$ mH/km | (iv) $0.55 \ln r/D$ mH/km |
- f. 120km long transmission line is considered to be line
- | | |
|--------------|------------|
| (i) Long | (ii) Short |
| (iii) Medium | (iv) None |
- g. The pin type insulators are normally used up to kV
- | | |
|----------|---------|
| (i) 45 | (ii) 66 |
| (iii) 33 | (iv) 11 |
- h. For low voltages of the order of 11kV, Insulators are used.
- | | |
|-------------------|----------------------|
| (i) Pin type | (ii) Shackle type |
| (iii) Strain type | (iv) Suspension type |
- i. The resistance of the core of the cable is directly proportional to ... of the cable.
- | | |
|------------|-------------|
| (i) length | (ii) radius |
| (iii) both | (iv) none |
- j. Cables are used for 132kV lines
- | | |
|--------------------------|--------------------------|
| (i) High tension | (ii) Super tension |
| (iii) Extra high tension | (iv) Extra super voltage |

PART – B: (Short Answer Questions)

(2 x 5 = 10 Marks)

Q.2. Answer ALL questions

- a. What is the need for transposition of transmission lines?
- b. What are ABCD constants in a medium transmission line?
- c. State different types of insulators.
- d. Define GMD.
- e. State the limitations of Kelvin's law.

PART – C: (Long Answer Questions)

(6 x 5 = 30 Marks)

Answer ANY FIVE questions

Marks

3. Derive the inductance of Two-Wire (1-phase) Transmission line. (6)
4. A 3 phase, 50 Hz, 66KV overhead transmission line has its conductors arranged at the corners of an equilateral triangle of 3m sides and the diameter of each conductor is 1.5cm. Determine the capacitance per phase, if the length of the line is 100Km and also calculate the charging current. (6)
5. A 3-phase 50Hz 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 1meter. The line is 20km long and delivers a load of 10 MW at 33kV and p.f. 0.8. Neglect capacitance and assume temperature of 20°C . Determine the efficiency and regulation of the line. (6)
6. What is surge impedance and surge impedance loading of a transmission line? What is the physical significance of SIL. (6)
7. Discuss the applications of capacitors in distribution systems (6)
8. With neat sketch explain the different types of insulators used for overhead lines. (6)
9. Derive an expression for the capacitance and insulation resistance of a single core cable. (6)
10. Explain about different methods of grading of cables. (6)

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