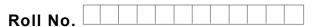


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B.Tech.(EE/Electrical & Electronics/Electronics & Electrical) (2011 Onwards)/ (Electrical Engineering & Industrial Control) (2012 Onwards)

(Sem.–4)

POWER SYSTEM-I (TRANSMISSION AND DISTRIBUTION) Subject Code : BTEE-405 Paper ID : [A1208]

Time: 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

- 1. Answer briefly :
 - (a) What is a ring distributor?
 - (b) What are the limitations of Kelvin's law?
 - (c) What is transposition of conductors?
 - (d) Define Self and mutual G.M.D.
 - (e) Define inductance of a line. Mention the factors governing inductance of a line.
 - (f) Classify overhead transmission lines.
 - (g) What is a power circle diagram?
 - (h) What are the factors which govern the performance of a transmission line?
 - (i) What is meant by serving of a cable?
 - (j) What are the main causes for failure of insulators?

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SECTION-B

- 2. Explain the effect of high voltage on volume of copper and on efficiency.
- 3. Draw and explain the structure of modern power systems with typical voltage levels.
- 4. From the fundamentals derive an expression for inductance of a single phase transmission system.
- 5. Explain the classification of lines based on their length of transmission.
- 6. Explain shunt compensation with necessary diagram.

SECTION-C

- 7. Find the capacitance between the conductors of a single-phase 10 km long line. The diameter of each conductor is 1.213cm. The spacing between conductors is 1.25m. Also find the capacitance of each conductor neutral.
- 8. Determine the efficiency and regulation of a three phase 200 km, 50Hz transmission line delivering 100MW at a pf of 0.8 lagging and 33kV to a balanced load. The conductors are of copper, each having resistance 0.1Ω /km, and 1.5cm outside dia, spaced equilaterally 2m between centers. Neglect leakage reactance and use nominal T and π methods.
- 9. Derive expressions for sag and tension in a power conductor strung between to supports at equal heights taking into account the wind and ice loading also.