Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

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?

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.