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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (EE) PT (Sem.-3)

**POWER SYSTEM – I (TRANSMISSION & DISTRIBUTION)**

Subject Code : BTEE-405

M.Code : 72165

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS 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****Write briefly :**

1. What are the limitations of Kelvin's law?
2. What is meant by power supply system?
3. Define Feeder, Distributor and Service Mains.
4. What is purpose of insulator?
5. Define Surge Impedance Loading.
6. What is series compensation?
7. What is a ring distributor?
8. Write an expression for inductance of a single phase transmission system.
9. Define - Self and mutual - G.M.D.
10. Why all overhead lines use ACSR conductors?

**SECTION-B**

11. Explain the classification of lines based on their length of transmission.
12. Explain Kelvin's Economy Law and derive the condition for most economical cross-sectional area of the conductor.
13. Draw and explain the layout of a power system network from generation to distribution showing all the voltage levels at various intermediate stages.
14. Explain in brief various types of conductors with one advantage of each type.
15. Explain shunt compensation with necessary diagram.

**SECTION-C**

16. A 3-phase 132 kV, 100 Km, 50 Hz, single circuit line has horizontal spacing with 3.5 m between adjacent conductors. The conductor's diameter is 1.2cm. Find the line capacitance per phase and the charging current per phase :
  - a) Without effect of earth
  - b) With effect of earth.
17. Derive A, B, C and D parameters for Nominal  $\pi$  model of a medium line and draw its phasor diagram?
18. A three phase 5 km long transmission line, having resistance of  $0.5 \Omega / \text{km}$  and inductance of  $1.76 \text{mH/km}$  is delivering power at 0.8 pf lagging. The receiving end voltage is 32kV. If the supply end voltage is 33 kV, 50 Hz, find line current, regulation and efficiency of the transmission line?

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**