



C09-EE-606

3769

BOARD DIPLOMA EXAMINATION, (C-09)
MARCH/APRIL—2014
DEEE—SIXTH SEMESTER EXAMINATION
POWER SYSTEMS—II

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. State any three requirements of conductor materials.
2. List out the effects of transposition.
3. State any three advantages of HVDC transmission system.
4. What is the need for cross-arms on transmission lines?
5. List any three disadvantages of loose spans in a transmission line.
6. Write any three advantages of outdoor substations over indoor substations.
7. Classify the underground cables based on the nature of application of insulation and lead sheathing.

- * 8. Classify the distribution systems based on the scheme of connections.
9. Draw the schematic diagram for pilot-wire protection using circulating current differential relaying scheme.
10. List any three types of lightning arrester.

PART—B

10×5=50

Instructions : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. (a) Explain the charging current in a transmission line. 5

(b) A single-phase transmission line is delivering 500 kVA load at 2000 V. Its resistance is 0.2 ohm and inductive reactance is 0.4 ohm. Determine the voltage regulation, if the load power factor is 0.707 lagging. 5

12. A 3-phase, 50 Hz transmission line has the following constants (line to neutral) :

Resistance = 11 ohm, Reactance = 38 ohm,

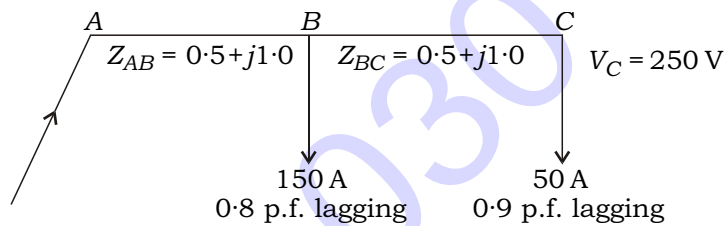
Susceptance = 3×10^{-4} mho, Leakage negligible

The capacitance can be assumed located half at each end of the line. Calculate the sending end voltage, the line current and the efficiency of transmission when the load at the end of the line is 40000 kVA at 110 kV power factor 0.7 lagging. 10

13. (a) Explain the methods of reducing corona. 5

(b) Compare overhead lines with underground cables in any five aspects. 5

- * 14. (a) A transmission line has a span of 300 m between level supports. The weight of the conductor is 0.844 kg/m and the ultimate breaking strength is 7950 kg. If the factor of safety is 2, calculate the sag, if the conductor has an ice load of 1 kg/m and a horizontal wind pressure of 1.5 kg/m. 6
- (b) State any four requirements of insulators. 4
15. (a) Define (i) flashover and (ii) puncture. 4
- (b) Explain the methods of improving the string efficiency. 6
16. Find the sending end voltage and power factor of AC distributor as shown below. The power factors are with respect to receiving end voltage : 10



17. Explain the protection of parallel feeders using directional and non-directional relays. 10
18. (a) Write any four advantages of neutral grounding. 4
- (b) Explain solid grounding with a neat sketch. 6
