



C09-EE-606

3769

BOARD DIPLOMA EXAMINATION, (C-09)
MARCH/APRIL—2016
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 the requirements of conductor material. 1+1+1
2. Define Ferranti effect and draw the vector diagram. 2+1
3. State the advantages of HVDC transmission system. 1+1+1
4. State the requirement of insulators. 1+1+1
5. State the factors affecting sag. 1+1+1
6. State the need of substation. 1+1+1
7. Classify the cables based on number of conductors. 3

8. Define feeder, distributor and service main. 1+1+1
9. Draw the circuit diagram for protection of parallel feeder using directional and non-directional relays.
10. What are the disadvantages of ungrounded neutral system? 1+1+1

PART—B

10×5=50

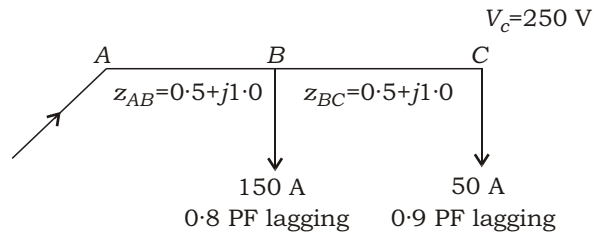
Instructions : (1) Answer *any five* questions.

(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. Derive an equation for capacitance of single-phase overhead line.
12. A three-phase line delivers a load of 3600 kW at 33 kV and 0.8 PF lagging. Determine (a) sending end voltage, (b) line current, (c) sending end power factor and (d) voltage regulation. The resistance and reactance of each conductor are 5.31 ohm and 5.54 ohm respectively.
13. (a) Explain (i) skin effect and (ii) transposition of transmission lines. 5
- (b) Derive the equation for insulation resistance of a cable. 5
14. The line supports of an overhead line are 180 m apart and are at the same level. Diameter of the conductor is 1.27 cm. Calculate the maximum sag (a) in still air and (b) in a wind pressure of 33.7 kg/m^2 of the projected area of the ice covered line. The radial thickness of the ice is 1.25 cm. Maximum stress in the line is 844 kg/m^2 . The weight of the conductor is 1.13 kg. Density of ice is 915 kg/m^3 .

15. State and ^{*} explain the method to improve string efficiency.
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 :



17. Explain protection of transmission lines using impedance relay.
18. Explain construction and working of valve type lightning arrester, with a neat sketch.

★ ★ ★