



C16/C16S-EE-403

5656

BOARD DIPLOMA EXAMINATION, (C-16 / C-16S)

NOVEMBER - 2019

DEEE - IV SEMESTER EXAMINATION

POWER SYSTEMS - II (T&D)

Time : 3 Hours]

[Total Marks : 80

PART - A

3×10=30

- Instructions :**
- (1) Answer **ALL** questions.
 - (2) Each question carries **THREE** marks.
 - (3) Answer should be brief and straight to the point.

- 1/ What are the advantages of DC Transmission ?
- 2/ Define Skin effect and Ferranti effect.
- 3/ Draw the vector diagram for short transmission line.
- 4/ What are the applications of HVDC transmission system ?
- 5/ What are the factors affecting the conductor spacing and ground clearance ?
- 6/ State the applications of : (i) Strain (ii) Shackle insulators.
- 7/ Define labels.
- 8/ Draw the single line diagram of duplicate bus-bar system.
- 9/ State the disadvantages of radial distribution systems.
- 10/ Define Feeder, Distributor and Service mains.

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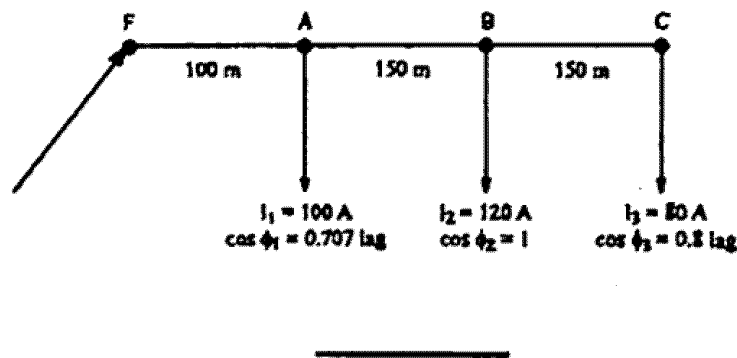
PART - B

10×5=50

- Instructions :**
- (1) Answer any **FIVE** questions.
 - (2) Each question carries **TEN** marks.
 - (3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 11 Derive an expression for inductance in a single phase overhead transmission line. <http://www.sbtetonline.com>
- 12 A 3-phase, 50 Hz, 150 km has a resistance, inductive reactance and capacitive shunt admittance of 0.1Ω , 0.5Ω and $3\times 10^{-6}\text{ }\bar{U}$ per km per phase. If the line delivers 50 MW at 110 kV and 0.8 p.f. lagging. Determine sending end voltage, current, p.f. efficiency of power transmission and regulation by using nominal-T method.
- 13 (a) Define Corona. Give expression for critical disruptive voltage, and power loss due to Corona. **5**
- (b) Classify various types of Distribution systems. **5**
- 14 (a) Define Sag and what are the factors affecting the sag ? **5**
- (b) A transmission line conductor having a diameter of 20 mm weighs 0.9 kg/m. The span is 300 m. The wind pressure is 40 kg/m^2 of projected area with ice coating of 13 mm. The ultimate strength of the conductor is 8000 kg. Calculate the maximum sag if the factor of safety is 2 and ice weighs 950 kg/m^3 . **5**
- 15 (a) Define string efficiency and what are the methods to improve String Efficiency ? **5**
- (b) A 33 kV, 3-phase overhead transmission line is supported on a string of 3 similar insulators; the mutual capacitance is 10 times the shunt capacitance. Calculate the voltage across each disc and string efficiency. **5**

- 16 (a) Draw general construction of a cable and briefly explain various parts. 5
- (b) Determine the insulation resistance of a single core cable of length 4 km and having a diameter of 24mm with insulation thickness of 12 mm. Specific resistance of Insulation material is $7.5 \times 10^{12} \Omega\text{-m}$. 5
- 17 Explain the various equipments used in Substations.
- 18 For the single phase AC distributor as shown in fig. below. Calculate the total voltage drop. The resistance and reactance are 0.52Ω and 0.25Ω for 2 km to and fro.



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