



C14-EE-503

4635

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH / APRIL - 2019

DEEE - V 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 and shall not exceed five simple sentences.

- 1 Write any three requirements of conducting material used for transmission lines.
- 2 What is skin effect and what are the factors affecting it ?
- 3 What are the factors affecting corona ?
- 4 Draw the schematic diagram of HVDC transmission system and label its parts.
- 5 List the factors influencing the selection of the line supports.
- 6 Define string efficiency in overhead transmission lines.
- 7 What are the requirements of insulating material for underground cables ?
- 8 What is the purpose of earthing ?
- 9 Define the terms :
 - (a) Feeder
 - (b) Distributor
 - (c) Service main
- 10 State the advantages of ring distribution system.

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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 the criterion for valuation is the content but not the length of the answer.

- 11** Derive an expression for capacitance of a single phase overhead transmission line. **10**
- 12** A three phase 50 hz overhead transmission line delivers 10 MW at 0.8 pf lagging at 66 kv. The resistance and inductive reactance of the line per phase are 10 ohm and 20 ohm respectively while capacitive admittance is 4×10^{-4} mho. Calculate (a) Sending end current, (b) Sending and voltage (Line-to-Line), (c) Sending end power factor, (d) Transmission efficiency using normal T method. **10**
- 13** (a) Write short notes on Hot line technique in a transmission line. **5**
 (b) Compare Radial and Ring distribution system. **5**
- 14** A transmission line has a span of 150 m between the level support, the conductor has a cross sectional area of 2 cm^2 . The ultimate strength is 5000 kg/cm^2 the specific gravity of the material is 8.9 gm/cm^3 of the wind pressure is 1.5 kg/m length of conductor, calculate the sag at the center of the conductor, if the factor of safety is 5. **10**
- 15** An insulator string consists of three units each having a safe working voltage of 15 KV. The ratio of self capacitance to shunt capacitance of each unit is 8:1. Find the maximum safe working voltage of string. Find the string efficiency. **10**
- 16** (a) Derive the expression for insulation resistance of a cable. **5**
 (b) A single core cable has a conductor diameter of 1 cm and insulation thickness of 0.4 cm. If the specific resistance of insulation is $5 \times 10^{14} \text{ ohm-cm}$. Calculate the insulation resistance for a 2 km length cable. **5**

- 17 State and explain the different types of equipment used in substations. 10
- 18 A two wire distributor 1200 metres long is loaded as shown in fig. with bas the mid point. The power factors at the two load points refer to the voltage at 'c'. The impedance of the each line is $0.15 + j0.2$ ohm for 1200 m. Calculate the sending end voltage and current. The voltage at point C is 220 volts. 10

