



C09-EE-606

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BOARD DIPLOMA EXAMINATION, (C-09)

MARCH / APRIL - 2019

DEEE - VI 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) Answer should be brief and straight to the point.

- 1 List the types of conductors that are generally used for Transmission lines.
- 2 State Ferranti effect.
- 3 State any three advantages of HVDC transmission system.
- 4 State the need of Cross - arms in Over Head lines.
- 5 State any three advantages of steel poles over wooden poles.
- 6 State the working of circuit breakers in substation.
- 7 State the use of capacitor banks in substations.
- 8 Classify the distribution system according to the types of service.
- 9 Draw a schematic diagram of pilot wire protection using circulating current differential relays.
- 10 Define Surge in Power system.

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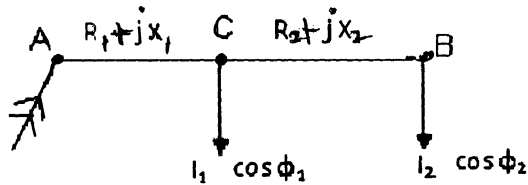
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PART - B**10×5=50**

- 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** (a) Compare A.C. and D.C. transmission in any five aspects.
 (b) Write the effect of voltage on line efficiency and line losses.
- 12** A 3- Φ , 50Hz OH line 160 km long with 132 kV between the line at receiving end has the following constants :
- Resistance/km/conductor = 0.16 Ω
 Inductance/km/conductor = 1.2 mH
 Capacitance/km/conductor = 0.0082 μ F
- Determine the (i) sending end voltage (ii) current and (iii) voltage regulation when supplying a load of 100 MVA at 0.8 p.f lagging using nominal - π method.
- 13** (a) Explain the effect of wind and ice load on sag.
 (b) Calculate the sag in an OH line under the following conditions.
 Length of span = 150 m
 Cross - sectional area of conductor = 125 mm²
 Breaking strength = 42 kg/mm²
 Factor of safety = 5
 Weight of the conductor = 0.859 kg/m.
- 14** (a) Explain why the potential distribution over the string of a suspension disc insulators is not uniform.
 (b) In a 33 kV OH line, there are 3 units on a string of insulator. If the capacitance between each insulator pin and earth is 11% of self capacitance of each insulator. Find the distribution of voltage over the three insulators.

- 15 Write the method of solving voltage drop V_{AB} in the A.C. distributor shown in fig. when power factors referred to respective load voltages with a neat phasor diagram.



- 16 Explain with a legible sketch the differential protection of bus bars.
- 17 Explain the method of resistance grounding with a legible sketch.
- 18 (a) Write the expressions for
- (1) Critical disruptive voltage.
 - (2) Power loss due to corona.
- (b) A single core cable 5 km long has an insulation resistance of $0.4 \text{ M}\Omega$. The core diameter of 20mm and the diameter of the cable over the insulation is 50 mm. Calculate the resistivity of the insulation material.
