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Question Paper Code : 86592

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Fifth Semester

Electrical and Electronics Engineering

EE 1302 — TRANSMISSION AND DISTRIBUTION ENGINEERING

(Regulations 2008)

Time : Three hours

Maximum : 100 marks

Ordinary graph sheet maybe provided.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Make a comparison of HVDC and EHVAC on economic basis.
2. Write the basic principle of UPFC.
3. What is proximity effect?
4. What is the need for reactive power compensation in transmission line?
5. Draw the nominal π representation of a transmission line.
6. Define surge impedance loading.
7. List the most suitable materials for insulators.
8. Write the typical properties of cable insulations.
9. How substations are classified?
10. What are the advantages of neutral grounding?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw and explain the line diagram of a typical transmission and distribution scheme. Indicate clearly the voltage levels - used at different stages. (10)
- (ii) Differentiate between SVC and STATCOM. (6)

Or

- (b) (i) Compare EHV AC and HVDC transmission systems. (10)
- (ii) Mention the applications of HVDC transmission system. (6)
12. (a) A double circuit three-phase line has conductors of 2.75 cm diameter and distance of separation is 3 m in the hexagonal spacing arrangement. Calculate the inductance and capacitance to neutral per phase of the system for 200km line length.

Or

- (b) (i) Derive suitable expressions and explain the electromagnetic and electrostatic effects of transmission lines with neighboring communication circuits. (10)
- (ii) Write brief note on conductor types and electrical parameters of different voltage levels. (6)
13. (a) Find the auxiliary (*A*, *B*, *C*, *D*) constants of a medium length transmission line based on:
- (i) Nominal T method
- (ii) Nominal H – method. (8+8)

Or

- (b) A 3-phase, 50Hz ac transmission line, 160 km long , has the following constants :

Resistance per phase per km = 0.2 Ohm

Reactance per phase per km = 0.3127 Ohm

Shunt admittance per phase per km = 1.875×10^{-6} siemen.

Determine the sending end voltage and current when the line is delivering a load of 25 MVA at 0.8 power factor lagging. The receiving end voltage is kept constant at 110 kV. (16)

14. (a) Explain in detail with necessary diagram the pin type and suspension type insulators. (16)

Or

- (b) Explain with necessary diagram the elastomer insulated, paper insulated and polythene insulated cables. (16)
15. (a) Explain the various types of bus bar arrangements in a substation with neat diagram.

Or

- (b) Explain the following distribution schemes.
- (i) Radial system (8)
- (ii) Ring main System. (8)
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