

Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P14

APR - 18/TE/Insem. - 16

T.E. (Electrical)

POWER SYSTEM-II

(2012 Course) (Semester-II)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Use of calculator is allowed.*
- 5) *Assume suitable data, if necessary.*

- Q1)** a) Derive the power flow equation using generalized constants for transmission line. [6]
- b) Explain the term compensation. What are different methods of compensation? [4]

OR

- Q2)** a) A three phase transmission line, 160km long, has the following constants
- Resistance/ph/km = 0.2Ω
- Reactance/ph/km = 0.3127Ω
- Shunt admittance/ph/km = $1.875 \times 10^{-6}S$
- Determine the sending end voltage and current when the line is delivering a load of 25MVA at 0.8 p.f. lagging. The receiving end voltage is kept constant at 110 kV. [6]
- b) What is surge impedance loading? Explain any one method used to improve surge impedance. [4]

P.T.O.

- Q3)** a) Explain the constant current control method for HVDC Transmission System. [5]
b) State advantages and disadvantages of HVDC transmission. [5]

OR

- Q4)** a) Explain different types of HVDC links. Name any two HVDC systems in India. [5]
b) Draw single line diagram of HVDC system and explain components of it. [5]

- Q5)** a) A 132kV line with 1.956 cm diameter conductor is built so that corona takes place if the line voltage exceeds 210kV(rms). If the value of potential gradient at which ionization occurs can be taken as 30kV/cm. Find the spacing between the conductors. (Assume $\delta = 1$) [6]
b) Define [4]
i) Critical disruptive voltage
ii) Visual critical voltage

OR

- Q6)** a) In three phase overhead line the conductors have each diameter of 30mm and are arranged in the form of an equilateral triangle. Assuming fair weather conditions air density factor is 0.95 and irregularity factor 0.95. Find the minimum spacing between the conductors if the disruptive critical voltage is not to exceed 230kV between lines. Breakdown strength of air may be assumed to be 30kV per cm(peak) [6]
b) What is corona? Explain the methods of reducing the corona effects.[4]

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