Total No. of Questions : 6]

SEAT No. :

P3631

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APR-15/ENGG.-116

T.E. (Electrical) (In Sem - Semester - II)

POWER SYSTEM - II

(2012 Pattern)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Solve 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) A 132kV, three phase line has the following line parameters : **[5]**

$A = 0.98\angle 3°$, $B = 110\angle 75°$ ohms per phase. If the receiving end voltage is 132kV determine:

Sending end voltage and power angle if a load 50MVA at 0.8 p.f. (lagging) is being delivered at receiving end.

b) Explain the term compensation and what are different methods of compensation? **[5]**

OR

Q2) a) Derive equation for receiving end active and reactive power flow in the transmission line. **[5]**

b) Explain the procedure for drawing the receiving end circle diagram. **[5]**

Q3) a) What are the recent developments in HVDC transmission system? State any two HVDC systems in India. **[5]**

b) Compare HVDC system with EHVAC system. **[5]**

OR

P.T.O.

Q4) a) Give the classification of HVDC transmission system in detail. **[6]**

b) Explain constant current control characteristic of HVDC transmission system. **[4]**

Q5) a) Explain the phenomenon of corona and state factors affecting corona loss. **[4]**

b) Find the disruptive critical voltage and visual critical voltage for local and general corona for a three phase line consisting of 21mm diameter conductors spaced in 6 m delta configuration. Take temperature 25° C, pressure 73 cm of mercury, surface factor 0.84, irregularity factor for local visual corona 0.72 and for general (decided) visual corona 0.82.**[6]**

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) Explain power handling capacity and power loss at various voltage levels. **[4]**