P.E. (Elect.) V (Rev.)
Elements y power sys.
28/5/07

VT April 07 137

Con/2273-07.   (REVISED COURSE)   ND—9110
                                   (3 Hours)   [Total Marks : 100

Mason

N.B. : (1) Question No. 1 is **compulsory**.
       (2) Attempt any **four** questions out of remaining **six** questions.
       (3) Assume additional data if **required**.

1. (a) Explain skin effect.   20
   (b) Explain feranti effect.
   (c) Comment on "P. V. Equivalent of transformer reffered to high as well as low side are
       equal."
   (d) Define and explain 'Capacity factor' and 'Utilization factor'.

2. (a) Explain in detail the measurement of earth resistance and soil resistivity.   10
   (b) Derive A, B, C, D constants, regulation and efficiency of medium transmission 10
       line using nominal – π method.

3. (a) Describe the methods to improve string efficiency.   10
   (b) Describe pumped storage power plant.   10

4. (a) A three phase, 100 km transmission line is delivering 50 mW, 0.8 P.F. Lagging at 132 12
       kV. Each conductor is having resistance 0.1 ohm/km, reactance 0.3 ohm/km and
       admittance 3×10^{-6} Mho/km. If the load is balanced and leakage is neglected,
       calculate the sending end voltage, sending end power factor, efficiency and regulation
       of the line using nominal T-method.
   (b) Derive the expression for the inductance of a single phase two wire line.   8

5. (a) Explain the advantages of per unit system.   10
   (b) A 33 kV, 3-phase circuit is coupled to a 220 kV, 3-phase circuit by a 3-phase, 30 MVA, 10
       Y/Δ transformer. Calculate base impedance base current in different parts of the
       circuit. Choose base MVA = 30. What is the PU value of 400 ohm impedance in
       220 kV circuit.

6. (a) What are the methods of voltage control. Explain in details.   10
   (b) Explain the method of improving string efficiency.   10

7. Write short notes on any **three** :   20
       (a) Non Conventional Source of Energy
       (b) Tuned Power Lines
       (c) Effect of Charging Current
       (d) Different Losses in Cables.

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