Department of Electrical Engineering
Assignment
Date: 24/06/2020

Course Details

Course Title: Electric Power Transmission   **Module:**   4rth

Instructor: **Total Marks:**   50

Student Details

Name: **Student ID:**

Q1	A single phase line has two parallel conductors 2 meters apart. The diameter of each conductor is 1·2 cm. Calculate the loop inductance per km of the line.	Marks 10 CLO 1

Q2	A single phase transmission line has two parallel conductors 3 m apart, the radius of each conductor being 1 cm. Calculate the loop inductance per km length of the line if the material of the conductor is
	    (i) Copper
	    (ii) Steel with relative permeability of 100.
		Marks 10
		CLO 1

Q3	A long transmission lines more than 240kms are consisting of high amount of capacitance and inductance distributed across the entire length of the line. Ferranti effect occurs when current drawn by the distributed capacitance of the line itself is greater than the current associated with the load at the receiving end of the line (during light or no load). Why Ferranti effect occurs in long transmission line? Back your answer with valid data, facts and figures.	Marks 10 CLO 1
Q4	A 3-phase load of 2000 kVA, 0·8 p.f. is supplied at 6·6 kV, 50 Hz by means of a 33 kV transmission line 20 km long and 33/6·6 kV step-down transformer. The resistance and reactance of each conductor are 0·4 Ω and 0·5 Ω per km respectively. The resistance and reactance of transformer primary are 7.5 Ω and 13.2 Ω, while those of secondary are 0.35 Ω and 0.65 Ω respectively. Find the voltage necessary at the sending end of transmission line when 6.6 kV is maintained at the receiving end. Determine also the sending end power factor and transmission efficiency.	Marks 10 CLO 2
Q5	A 132 kV line with 1.956 cm dia. conductors is built so that corona	Marks 10

| | takes place if the line voltage exceeds 210 kV (r.m.s.). If the value of potential gradient at which ionization occurs can be taken as 30 kV per cm, find the spacing between the conductors. | CLO 2 |