TULSIRAMJI GAIKWAD-PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
Wardha Road, Nagpur - 441108
Accredited with NAAC A+ Grade
Approved by AICTE, New Delhi, Govt. of Maharashtra
(An Autonomous Institution Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

Department of Electrical Engineering (NBA Accredited)

Third Year (Semester-VI) B. Tech. Electrical Engineering

BEE3602: EHVAC and HVDC Transmission

Assignment No.01

1.	Explain the Necessity of EHV AC transmission.	CO1
2.	Calculate the maximum voltage gradient on the center of outer phases of 3 conductors in case of EHVAC Transmission system of 735 kV line. The line parameter are N = 4, r=0.0176 m, B = 0.4572 m for Bundled conductor of each phase. The line height and phase spacing in Horizontal Configuration are H = 15m & S = 15m use mangoldt formulae	CO1
3.	A power of 2000 MW is to be transmitted from Chandrapur thermal power station to western part of Maharashtra over a distance of 800 km. Use 400 kV and 750 kV transmission system for it. Calculate number of circuits with 40% series capacitor compensation and also calculate the total power loss per km. Assume δ=30º and values of 'x' and 'r' are as given below:	
4.	A power of 2150 MW is to be transmitted over a distance of 920km on a voltage level of 400kv and 750 kv. line reactance and resistance are as follow.	
5.	Explain and derive cosine law of variation of surface voltage gradient of bundled conductors.	CO1
6.	Prove that the percentage power loss in EHVAC transmission line is independent of its length and it depends on the ratio of conductor resistance to the positive sequence reactance per unit length.	CO2
7.	What is charge voltage diagram? Derive the expression for Pc =½ kc ($V_m^2 - V_0^2$) for corona energy loss from a charge voltage diagram	CO2
8.	Explain Radio Interference and Audible noise due to corona.	CO2
9.	Find the critical disruptive voltage and critical voltage for local and general corona on a 66kV, 3 phase overhead line consisting of three stranded copper of an equilateral triangle. Air temperature and pressure are 21^0C & 73.6cm of Hg respectively. The conductor diameter is 10.4mm.	CO2
10.	What is critical disruptive voltage? Discuss the factors affecting corona power loss.	CO2

System (kv)	400	750
x Ω/km:	0.327	0.272
r Ω/km	0.031	0.0136

System (kv)	400	750
Line reactance Ω/km:	0.327	0.272
Line resistance Ω/km	0.031	0.0136

Date of assignment display: 27/01/2024 Date of assignment submission: 04/03/2024

Course Coordinator HoD,EE