

Roll No.

Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. (EE) (Sem.-2)
EHVAC TRANSMISSION

Subject Code : ELE-510

M.Code : 36010

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT question.
2. Each question carry TWENTY marks.

- Q1 a) What is the necessity of EHV AC Transmission? What are the advantages and disadvantages of EHV AC Transmission?
- b) Explain the effect of resistance of conductor in EHV AC transmission system. Explain the power handling capability and line losses in EHV lines and discuss the useful conclusions from it.
- Q2. The dimensions of the 3-phase, 400 kV horizontal line shown in Fig. 1 are $H = 15\text{ m}$, $S = 11\text{ m}$ phase separation, Conductor is $2 \times 3.18\text{ cm}$ diameter, Bundle spacing $B = 45.72\text{ cm}$. Calculate the matrix of inductance per km for transposed and untransposed lines.

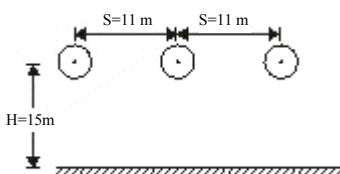


Fig.1

- Q3. Starting from the fundamentals derive the expression for potential relations for multi-conductor lines.
- Q4. Explain in detail the measurement of Audible Noise. What is Corona? Explain the corona pulses, their generation and properties.
- Q5. Derive the expression for total electrostatic field component of a 3-phase, single circuit AC line.

- Q6. Explain in shunt and series compensation in EHVAC systems. Draw the diagram showing extra long line with shunt reactors at ends and at an intermediate station.
- Q7. Explain the steps in the design of EHV lines based on steady state limits.
- Q8. Write short note on the following :
- a) Transient over-voltages
 - b) Reactive power control apparatus
 - c) Lightning protection of EHVAC systems
 - d) Travelling waves in EHVAC lines.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.