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M.Tech.(Power System) (E-I) (Sem.-2)**EHVAC TRANSMISSION****Subject Code : PEE-514****M.Code : 38814****Time : 3 Hrs.****Max. Marks : 100****INSTRUCTIONS TO CANDIDATES :**

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

- Q1 What are the various configurations of tower? Explain with neat diagrams and compare them from the point of view of applications with reasoning. (20)
- Q2 (a) Derive the expressing determining the thermal rating of EHVAC Line transmission? (10)
- (b) Explain the importance of current carrying capacity and temperature rise in conductor for design of line. (10)
- Q3 (a) Discuss the method of line of charge and their properties. (10)
- (b) Derive the formula based on voltage gradient for corona loss. (10)
- Q4 (a) Derive expression for capacitance of long objects under transmission lines. (10)
- (b) Discuss the electrostatic effect due to 3 phase single and double circuit EHV AC Lines. (10)
- Q5 Compute the *rms* values of ground level electrostatic field of a 400KV line at its maximum operating voltage of 420KV (L-L) given in the following details :
- Single circuit horizontal configuration $H = 13$ m, $S = 12$ m, Conductor 2×3.18 cm, $B = 45.72$ cm. Vary the horizontal distance along ground from the line centre from 0 to $3H = 39H$. (20)

- Q6 (a) Explain the lightening arresters and protective characteristics in details. (10)
- (b) A 750KV bushing is protected by gaps, which withstand 2PO power frequency voltages. Determine their 50% flash over value under 50Hz, lightening impulse voltage if :
- (i) Rod plane gap is used and
- (ii) Rod-rod gap is used. (10)
- Q7 What are the criteria for designing EHV lines based on steady state limits and other parameter. (20)
- Q8 (a) Surge Arrester (5)
- (b) Transient over voltage in EHV AC (5)
- (c) Radio Interference (5)
- (d) EHV AC Circuit Breakers. (5)

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.