JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, March - 2021
EHV AC TRANSMISSION SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 Hours   Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.a) State the merits and demerits of EHV AC Transmission.
 b) Explain the properties of bundled conductor. Also, state their advantages and disadvantages.   [8+7]

2.a) A power of 5,000MW is required to be transmitted over a distance of 550 km. At voltage level of 750 KV and 1000KV, determine the possible number of circuits required with equal magnitudes for sending and receiving –end voltages with 45^0 phase difference.
 b) Explain the necessity of E.H.V A.C transmission.   [8+7]

3.a) Derive an expression for an inductance of 2-conductor EHV AC line.
 b) What do you understand by ground return in E.H.V A.c transmission lines?   [9+6]

4. How do you calculate the maximum surface voltage gradients on the centre and outer phases of horizontal configuration of EHV AC line for $N \geq 3$ conductors?   [15]

5.a) Explain the phenomenon of radio interference in connection with E.H.V lines.
 b) An overhead conductor of 2.2 cm radius is 11m above ground. The normal voltage is 133 KV r.m.s to ground (230kV, line to line).The switching surge experienced is 4 p.u. Taking K=0.82, calculate the energy loss per km of the line. Assume smooth conductor.
                                                                                      [8+7]

6.a) Derive an expression, $P_c = 4f k c V (V-V_0)$ to calculate the corona loss in EHV A.C lines.
 b) Explain how an audible noise is generated in E.H.V A.C transmission lines? State their characteristics.   [8+7]

7. Explain the effect of high electrostatic field on biological organisms and human beings. [15]

8. Explain the method of voltage control using cascade connection of shunt and series compensation Components.   [15]

--ooOoo--