Exam.Code:1018
Sub. Code: 7785

1059

M.E. Electrical Engineering (Power System)
Second Semester
EE-8202: EHV AC Transmission

Time allowed: 3 Hours

Max. Marks: 50

NOTE: *Attempt <u>any five</u> questions. Missing data (if any) can be appropriately assumed.*

x-x-x

Q1. A) Explain surface voltage gradient on single conductor. (05)

B) Derive the Expression for Inductance of a Multi conductor line used in EHV AC Transmission Line. (05)

Q2. A) Describe the mechanism of formation of a positive corona pulse train. (05)

B) Describe the behavior of space-charge effects inside a corona envelope and discuss why load current cannot flow in a conductor inside this envelope even though it is a conducting zone. (05)

Q3.A) Explain field of a line charges and its properties. (05)

B) Write day-night equivalent noise level in detail. Discuss corona pulse generation and properties with the help of a diagram. (05)

Q4. Write all the methods used to reduce the switching surges in EHV system. Explain any two in detail with suitable circuit diagrams. (10)

Q5. A) A 750-kV line in horizontal configuration has $H = 18$ m and phase spacing $S = 15$ m. The conductors are 4×0.03 metre diameter with bundle spacing of 0.4572 metre. Using Mangoldt's Formula and the CIGRE formula, compute the RI level at 15 metres at ground level from the outer phase at 1 MHz in average fair weather. Is the width of corridor of 60 metres sufficient from the RI point of view? (05)

B) Why does line-generated corona noise not interfere with TV reception or FM radio reception? What causes interference at these frequencies? (05)

Q6.A) Explain the origin of the over voltages and write all the types of the types of over voltages. (05)

B) Explain clearly how over voltages are generated when interrupting (i) low inductive currents and (ii) low capacitive current. Draw a figure showing ferro-resonance condition in a network when two poles of a circuit breaker are open and one pole is closed. (05)

Q7.A) What is the reason for the existence of SSSR in the steady state and transient conditions in series capacitor compensated lines? (05)

B) Explain the voltage control using synchronous condensers. (05)

Q8.A) Explain in detail sub synchronous resonance problem and counter measures. (05)

B) Explain the line loadability and the effects of the overload on the system. (05)

x-x-x