

PART-A

(25MA1IKS)

- (a) Write short notes on ACSR overhead line conductor.
- (b) What is medium transmission line?
- (c) What is Ferranti effect?
- (d) What is puncture in an insulator?
- (e) What is Poly Vinyl Chloride(PVC)?
- (f) A single-phase overhead line 32 km long consists of two parallel conductors each 1 cm diameter, 3 meters apart. If the line voltage be 25 kV at 50 Hz, determine the charging current with the line open circuited.
- (g) Write short notes on efficiency of a transmission line.
- (h) Give the expression for power loss due to corona.
- (i) What are RCC poles and Steel poles?
- (j) Determine the economical core diameter of a single core cable working on 210 kV, 3-phase system. The maximum permissible stress in the dielectric is not to exceed 230 kV/cm.

PART-B

(50MARKS)

2. (a) What do you understand by the constants of an overhead transmission line?
- (b) Derive the formula for capacitance between two charged conductors with method of images.

OR

3. (a) What is bundled conductor and why it is used?
- (b) Derive the expression for capacitance of three phase line with symmetrical spacing.
4. (a) Derive the ABCD parameters of a Nominal-T represented medium length transmission line with neat phasor diagram.
- (b) A long transmission line has the following auxiliary constant :
 $A = D = 0.895 \angle 1.2^\circ$ $B = 92.5 \angle 73.03^\circ$ and $C = 0.001275 \angle 90.5^\circ$
Determine,
(i) Equivalent-T network and
(ii) Equivalent-1t network.

OR

5. (a) Define and explain surge impedance and surge impedance loading of a transmission line.
- (b) Explain how long lines are represented by equivalent-T model.
6. (a) Develop an equivalent circuit for analyzing the behaviour of travelling waves at transmon points on transmission lines.

- (b) Develop general formula for reflection and refraction coefficient for a line with surge impedance Z_c terminated by an impedance Z .

OR

7. (a) Explain the phenomenon of corona. What are the factors that affect the corona?
 (b) Write a short note on radio interference due to corona.
8. (a) Write short notes on the method of improving string efficiency using capacitance grading.
 (b) What are the factors affecting sag?

OR

9. (a) Write the advantages of suspension insulators over the pin type insulators for voltages more than 33 kV.

- (b) Show that in a string of suspension insulators, the nearest to the conductor has the highest voltage across it.

10. (a) Derive the formula for dielectric stress in an underground cable.
 (b) State the properties which the insulating materials for cables should possess.

OR

11. (a) Derive a formula for calculating the current rating of a cable.
 (b) Describe the constructing and working principle of a 3 core belted cable.

(Unit-III / 10)

(Unit-III / 04)

(Unit-III / 04)

(Unit-IV / 02)

(Unit-IV / 02)

(Unit-IV / 01)

(Unit-IV / 02)

(Unit-V / 02)

(Unit-V / 01)

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