(vi) Define voltage regulation.

(vii) Why protective covering is done is cables ?

(viii) Why armouring is not done in single core cables ?

(ix) What is meant by charging current of a cable ?

(x) Mention the limitation of norminaol T and pi-methods in the line problems.   **1½×10=15**

Sep-21-00064

B. Tech. EXAMINATION, 2021

Semester IV (CBCS)

TRANSMISSION AND DISTRIBUTION OF ELECTRICAL POWER

EE-403

Time : 2 Hours   *Maximum Marks :* 60

The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.

Note : Attempt *Four* questions in all, selecting *one* question from any of the Sections A, B, C and D. Q. No. **9** is compulsory. Use of non-programmable calculator is allowed.

Section A

1. (a) Give comparisons between indoor and outdoor substations. List the various substation equipments.   **7½**

(b) Explain advantages of three-phase system over a single-phase system. **7½**

2. (a) Explain radial and ring main system. **7½**

(b) What are the advantages of overhead system over underground system ? **7½**

Section B

3. (a) Calculate the loop inductance per km of a single-phase line comprising of 2 parallel conductors 1 meter apart and 1 cm in diameter, when the material of conductor is :

(i) Copper

(ii) Steel of relative permeability 50. **7½**

(b) What is skin and Ferranti effect ? **7½**

4. Draw the equivalent circuit of a long transmission line. Derive from the fundamentals the relationship between sending and receiving end voltage and current. **15**

Section C

5. Distinguish between disruptive critical voltage and visual critical voltage. Give expressions for the same. **15**

6. (a) Derive an expression for string efficiency. Why should shielding be provided to insulators ? **7½**

(b) List various tests conducted on insulator. **7½**

Section D

7. Derive an expression for the sag when support the are unequal levels and also analyze the effect of wind and ice on sag. **15**

8. For a single-core lead sheathed cable derive the expression for : **15**

(a) Maximum dielectric stress

(b) Capacitance.

(Compulsory Question)

9. (i) State the characteristics of high voltage for power transmission.

(ii) Draw the equivalent circuit diagram of nominal T representation of medium transmission line

(iii) What are the advantages of high voltage ac transmission ?

(iv) Why skin effect is absent in dc system ?

(v) Define proximity effect.