

FACULTY OF ENGINEERING

S.E.(EPTD)Examination - DEC - 2014

ELATRICAL POWER TRANSMISSION & DISTRIBUTION(Revised)

[Time: THREE Hours]

[Max. Marks: 80]

"Please check whether you have got the right question paper."

- i) Question, no.1&6 are compulsory
- ii) Attempt any two questions from question no.2 question 5 from section A
- iii) Attempt any two questions from question no.7 to question10 from section B

SECTION A

- Q 1 Attempt any five (10)
- A Classify transmission line on the basis of voltages.
 - B Draw a single line diagram showing a typical distribution system.
 - C State any eight components of transmission line
 - D What is interconnected system of distributing?
 - E Define tariff. List different types of tariffs.
 - F Define minimum demand & demand factor
 - G List the major electrical equipments in transmission substation.
- Q2 A Explain any two types of A.C. distributing solution. (05)
- B Give the advantages & difficulties associated with EHVDC transmission over 3- ϕ EHVAC transmission. (05)
- C Define load curve. What is its importance? (05)
- Q3 A What are surge arrestors? Where & why do we use these equipments? (05)
- B What are the different types of insulators? Write a note on pin type insulator with neat sketch. (05)
- C In a 33kv overhead line. There are 3 units in the string of insulator. If the capacitance between each Insulation pin & earth is 11% of the self capacitance of each insulator (05)
- Q4 A A single phase transmission line has two parallel conductors 3m apart, the radius of each conductor being 1 cm. calculate the loop inductance per km length of the line of the material of the conductor is (05)
- i) Cooper
 - ii) steel with relative permeability of 100
- B What is skin effect? Why is it absent in the D.C. system? explain (05)
- C Find an expression for the flux linkages due to single current carrying conductor. (05)
- Q5 A Write a note on GMR & GMD (05)
- B A short three phase overhead transmission line with impedance per phase $5+j20-\Omega$. When sending end & receiving end voltages are 46.85kv&33kv **respetively at** 0.8 p.f. logging calculate i) coherent ii)transmission efficiency (05)
- C Derive an expression for the loop inductance of a single phase line. (05)

SECTION-B

- Q6 Attempt any 5 question (10)
- A State the effect of low P.F. on
 - i) Efficiency of transmission line
 - ii) Regulation of transmission line
 - B What is the effect of capacitance in transmission line?

- C What is the meaning of transpositions of conductor draw figure?
- D A single phase transmission line has two parallel conductors 3m apart, reading of each conductor being 1cm. calculate the capacitance of the line per km. given that $\epsilon_0=8.854 \times 10^{-12}$ f/m
- E i) When an insulator breaks down by puncture. It is ----- damaged.
ii) Sag is provided in overhead lines so that-----
- F What is the function of armouring & load sheath in cable?
- G State two assumptions made while drawing equivalent circuit of nominal 'T' network of medium transmission line.
- Q 7 A A 3Q, 50Hz 132 kv overhead line has conductors placed in a horizontal plane 4.56m apart. Conductor diameter is 22.4mm. If the line length is 100km, calculate the charging current per phase assuming complete transposition. (05)
- B Derive the expression for capacitance of I-d with earth effect & without earth effect. (05)
- C Explain the phenomenon of corona. How corona effect can be reduced (state any two points) (05)
- Q 8 A Draw equivalent circuit & vector diagram for medium transmission line. State assumption made. (05)
- B What is the effect of load power factor on regulation & efficiency of a transmission line? Explain. (05)
- C State the values of generalized circuit constant of A,B,C,& D in case of (05)
- i) T-equivalent circuit
ii) TT equivalent CKT of medium transmission line
- Q 9 A Discuss the various types of line supports (05)
- B Explain any four factors affecting corona (05)
- c) Discuss the suitability of various types of overhead lines. (05)
- Q10 Write short note on any 3 (15)
- A Grading of cables
- B XLPE cables
- C ABCD parameters
- D GMR & GMD