Printed Pages: 3 **EE 403**

(Following Paper ID and Roll No. to be filled in your Answer Books)	
Paper ID : 121403	**Roll No.**

B.TECH.

Theory Examination (Semester-IV) 2015-16

ELEMENTS OF POWER SYSTEM

Time : 3 Hours ***Max. Marks : 100***

Section-A

1. Attempt all parts. All parts carry equal marks. (2×10 = 20)

(a) How does isolator differ from circuit breaker?

(b) What is single line diagram of power system?

(c) What are the components of transmission line?

(d) Differentiate between GMD and GMR.

(e) What is Ferranti Effect?

(f) What is disruptive critical voltage?

(g) What is the failure of insulators?

(h) Define figure of merit.

(i) Define underground cable.

(j) What are the advantages of neutral grounding?

Section-B

2. Attempt any five questions from this section. [10×5=50]

(a) Find the ratio of volume of copper required to transmit a given power over a given distance by Overhead system using (i) DC two wire system (ii) 3-phase 4 wire system.

(b) Derive A, B, C and D parameters for nominal II model of a medium transmission line and draw its Phasor diagram.

(c) Explain the phenomenon of corona formation and factors affecting, reducing corona. What is visual Critical voltage?

(d) What do you mean by string efficiency? Describe different methods of improving string Efficiency.

(e) Explain Catenary method for the calculation of sag and tension in transmission line when Supports are at equal levels.

(f) What is grading of cable? Discuss any one method of grading. Drive an expression for insulation resistance of a cable.

(g) Classify different types of Insulators with brief description.

(h) What are advantages of HV DC transmission? Discuss various types of HVDC links.

Section-C

3. Attempt any two questions from this section. (15×2=30)

(a) State and explain Kelvin's law for economic size of conductor. Discuss its limitations. Compare skin effect with proximity effect.

(b) Derive an expression for the capacitance of a three phase symmetrically spaced overhead transmission line. Calculate the capacitance of a 100 Km long 3-phase, 50 HZ overhead transmission line consisting of 3-conductors each of diameter 2 CM and spaced 2.5m at the corners of equilateral triangle.

(c) What is need of grounding the neutral? Describe briefly the various grounding techniques.