

May 2018

Exam.Code:0934

Sub. Code: 6979

1058

B.E. (Electrical and Electronics Engineering)

Fourth Semester

EE-403: Power Systems - I

(May - 2017)

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 (Section-A) which is compulsory and selecting two questions each from Section B.C.

x-x-x

<u>Section - A</u>		(10x1=10)
1. a)	Effective resistance of a cable is higher than its DC resistance.	
b)	What do you mean by surge impedance loading of lines.	
c)	Define string efficiency and its importance.	
d)	Give advantages of shunt compensation.	
e)	What are transposed conductors and their use.	
f)	What is proximity effect.	
g)	Define regulation of transmission lines.	
h)	Give advantages of bundled conductors.	
i)	What are the advantages of per unit system.	
j)	What is transposition. Why it is done .	
<u>Section - B</u>		
2. a)	Discuss methods of grading cables.	(5x2=10)
b)	A single core lead sheath cable is graded by using two dielectric of relative permittivity 3.6 (inner) And 2.5 (outer), the thickness of each being 1 cm. the core dia is 1 cm. system voltage is 3 phase, 66 KV. Determine the maximum stress in two dielectrics.	
3. a)	Assuming the shape of transmission line as parabola, derive an expression for calculating sag and conductor length.	(5x2=10)
b)	Explain methods of improving string efficiency.	
4.	Develop equivalent circuit for analyzing the behaviour of travelling waves at transition points on transmission lines. What are the expressions for surge impedance and wave velocity.	(10)
<u>Section - C</u>		
5. a)	Show that the inductance per unit length of an overhead transmission line due to internal flux linkages is constant and independent of size of conductor.	(5x2=10)
b)	Derive expression for capacitance of single phase transmission line taking into account the effect of earth.	
6.	Draw phasor diagram of a nominal T circuit of a transmission line. Derive expression for sending end voltage and current.	(10)
7.	A 300 Km long transmission line charged at 132KV has series impedance of $52+j200$ ohms per phase and shunt admittance of $j1.5 \times 10^{-3}$ siemens per phase to neutral. The line is supplying 40MVA at 0.8 p.f lagging. Find the sending end voltage, current, power and power factor for π network.	(10)

x-x-x