

SUBJECT CODE: 84
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E. (EEP/EE/EEE) Examination Nov/Dec 2015
Electrical Power Transmission & Dist.
(Revised)

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

- N.B
- i) Q.No.1 and Q.No.6 are compulsory.
 - ii) Answer any two questions from Q.No 2 to Q.No 5 from section A
 - iii) Attempt any two Questions from Q.No.7 to Q.No 10 from Section-B
- Section A
- Q1. A Attempt any five
- a. Draw single line diagram showing typical distribution system 02
 - b. What is proximity effect 02
 - c. What is skin effect 02
 - d. Define string efficiency 02
 - e. List equipment of transmission sub-station 02
 - f. Classify transmission Line on basis of voltages 02
 - g. State advantages of HVAC transmission 02
 - h. Define tariff. List different types of tariffs 02
- Q.2
- a) What are surge arresters? Where & why do we use these equipment 05
 - b) Compare EHVAC and HVDC transmission system 05
 - c) Each line of 3 ϕ system is suspended by a string of three similar insulators, If voltage across the line unit is 17.5 KV, Calculate line to neutral voltage .Assume shunt capacitance between each insulator and earth is $\frac{1^{th}}{8}$ of the capacitance of the insulator itself .Also find string efficiency 05
- Q.3
- a) Explain what is GMR and GMD 05
 - b) Derive an Expression for loop inductance of a single phase line 05
 - c) A short three phase overhead transmission line with independence per phase $5+j 20-2$, when sending end and receiving end voltages are 46.85 Kv & 33 Kv respectively. At 0.8 pf lagging .Calculate voltage regulation and transmission efficiency. 05
- Q.4 The towers of height 30 m & 90m respectively 05
- a) Support a transmission Line conductor is at water crossing. The horizontal distance between towers is 500 meter. If tension is conductor is 1600 kg. Find minimum clearance of the conductor at water and clearance midway between supports, height of conductor is 1.5 kg/m. Basis of tower can be considered to be at the water level. 05
 - b) Define load curve and diversity factor. State its importance 05
 - c) Why Bundled conductors are used for transmission voltage above 220 kv 05

Q.5	Write short notes on	
	i. Types of Insulators	05
	ii. Methods of improving string efficiency	05
	iii. Ring mains and Radio Distribution	05

Section-B

Q.6	Attempt Any (Five)	
	a) What is meant by transposition of conductor explain with neat sketch	02
	b) State two assumptions made while drawing equivalent circuits of nominal T network of medium transmission line	02
	c) What is effect of capacitance on transmission line	02
	d) What is mean by Short, medium and long transmission line	02
	e) State any two faults in under- ground cable	02
	f) What is main purpose if armoring	02
	g) What is concept of self EMD is not applicable for capacitance	02
	h) What are ABCD constants	02
Q.7	a) Draw equivalent circuit and vector diagram for medium transmission line-state assumptions made	05
	b) What is corona? What are the factors affecting it.	05
	c) A tree phase 50 Hz, 132 kv, over -head line has conductors placed in horizontal plane 4.56 meter apart. Conductor dia is 22.4mm. If line length is 100 kms. Calculate the charging current per phase. Assuming complete transposition	05
Q.8	a) Derive expression of capacitance of three phase line with unsymmetrical spacing	05
	b) Discuss various types of line supports	05
	c) Three phase 50 Hz transmission line 100 kms long delivers 200 mw. Power at 0.9 power factor lagging and that 110kv. The resistance and reactance of line per phase per kilometer are 0.2Ω and 0.4ohm respectively, while capacitance admittance is 2.5×10^{-6} siemens per km per phase. Calculate current and voltage at sending end and transmission efficiency. Use nominal T method.	05
Q.9	a) Find A B C D constant values for nominal π method	05

- b) Draw neat sketch of under- ground cable and explain its construction 05
- c) A 3 ϕ line delivers 3600 kw at a power factor at 0.8 lagging to a load. If sending end voltage is 33 KV determine 05
- i) Transmission efficiency ii) Line current iii) Line losses iv) Receiving end voltage

Q.10 Write short notes

- a. XLPE cables 05
- b. Ferrenti Effect 05
- c. Grading of cables 05