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SUBJECT CODE NO:- E – 72
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E.(EEP/EE/EEE) Examination Nov/Dec 2017
Electrical Power Transmission & Distribution
(OLD)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i. Q.No.1 & 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

- Q.1 Attempt any five 10
- a) Draw single line diagram showing typical distribution system.
 - b) What are the advantages & disadvantages of HVDC transmission?
 - c) Define tariff. List different types of tariffs.
 - d) Classify transmission line on basis of voltages.
 - e) What is skin effect?
 - f)
 - i. The power loss in an overload transmission line is mainly due to -----.
 - ii. Skin effect is ----- for standard conductor than the solid conductor.
- Q.2 I) Explain requirements of distribution system. 05
- II) What is surge arrestor? Where & why do we use these equipment's? 05
- III) State of explain different types of substations. 05
- Q.3 a) What is basic difference between isolator & circuit breaker? Explain the function of circuit breaker in power system. 05
- b) Show that in string of suspension insulator, the disc nearest to conductor has the highest voltage across it. 05
- c) What are the different types of insulators? Write a note on pin type insulator with neat sketch. Find 05
- 1) The distribution of voltage over 3 insulators
 - 2) String efficiency.
- Q.4 a) State three parameters of transmission line. What is effect of line parameters on performance of transmission line? 05
- b) What is skin effect? Why it is absent in D.C system? Explain? 05
- c) Find an expression for flux linkages due to single current carrying conductor. 05

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- Q.5 Write short note on any three. 15
- A) Ring & radial main system
 - B) Tariff
 - C) GMR & GMD
 - D) Proximity effect.

Section B

- Q.6 Attempt any five 10
- a)
 - i. If supply frequency increases, then skin effect is -----.
 - ii. If length of line decreases, its capacitance is -----.

- b) What is purpose of an overhead transmission line? How are these lines classified?
- c) What is meant by transposition of conductor explain with neat sketch.
- d) State any two faults in underground cable.
- e) What are ABCD constants?
- f) What is main purpose of armoing?
- g) What are effects of lagging & leveling P.F of load on regulating?

- Q.7 a) A single phase overhead transmission line delivers 500KW at 11kV, 0.8 p.f. lagging. If resistance & reactance per conductor is 0.45Ω & 0.08Ω respectively calculate 05
- i. Sending end voltage
 - ii. Transmission efficiency

- b) Derive the expression for capacitance of 3 - \emptyset line with equilateral spacing. 05

- c) A 3 - \emptyset , 50Hz, 132kV overhead line has conductors placed in horizontal plane 4.56m apart. Conductor diameter is 22.4mm. If the line length is 100 km, calculate the charging current per phase assuming complete transposition. 05

- Q.8 a) State values of generalized circuit constant of A,B,C &D in case of 05
- i. T - equivalent circuit
 - ii. π - Equivalent circuit of medium transmission line.

- b) What is effect of load power factor on regulation & efficiency of transmission line? Explain. 05

- c) A short 3 - \emptyset transmission line with an impedance of $(6 + j8)\Omega$ per phase has sending end & receiving end voltage of 120KV \emptyset 110 KV respectively for some receiving end load at power factor of 0.9 logging - Determine. 05

- 1) Power output
- 2) Sending end power factor

- Q.9 a) Derive expression for sag in overhead line when supports are at equal levels. 05

- b) Write a short note on grading of cables. 05

- c) The towers of height 30m & 90m respectively support a transmission line conductor at water crossing. The horizontal distance between towers is 500m. If the tension in the conductor is 1600kg. Find minimum clearance of conductor & water & clearance midway between supports. Weight of conductor is 1.5 kg/m. Bases of towers can be considered to be at water level. 05

Q.10 Write a short notes on (any three)

- a) Fareuti effect.
- b) Intersheath grading of cable
- c) Types of insulators
- d) XLPE cables.

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