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Total No. of Questions : 09] [Total No. of Pages : 02

Paper ID [EE305]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 5th) MAY 2008

POWER SYSTEM - I (EE - 305)

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is **Compulsory**.
2) Attempt any **Four** questions from Section - B.
3) Attempt any **Two** questions from Section - C.

MAY 2008

Section - A

Q1) *(10 × 2 = 20)*

a) List advantages of dc transmission over ac transmission.

b) Give advantages of bundled conductors.

c) Define string efficiency and its significance in power network.

d) What are transposed conductor and their use?

e) Distinguish between short, medium and long transmission lines.

f) Give advantages of series compensation.

g) What is meant by natural loading of lines?

h) What are ACSR conductors? Give their advantages.

i) Name the sources of heat generation in cables?

j) What is void formation in a cable?

Section - B

(4 × 5 = 20)

Q2) Discuss the elementary ideas about transmission line construction and errection.

Q3) Show that the inductance per unit length of an overhead line due to internal flux linkages is constant and is independent of size of conductor.

Q4) Find the A,B,C,D parameters of a 3-phase, 80 km, 50 Hz transmission line with series impedance of $(0.15 + j0.78)$ ohm per km and a shunt admittance of $j5.0 \times 10^{-6}$ mho per km.

Q5) Show how sending end power circle diagram of a transmission line based on generalized (A,B,C,D) constants can be drawn.

Q6) What are pressure cables? A 3-core cable gives on test a capacitance of 2 microfarads between two cores. Find the line charging current of the cable, when it is connected to 11kV, 50 Hz system.

Section - C

(2 × 10 = 20)

Q7) (a) Enumerate the important methods in use for improving the power factor at the receiving end of a transmission line.

(b) Discuss the action of a synchronous phase modifier for voltage regulation of a line and explain how its use increases the carrying capacity of a transmission line.

Q8) (a) Explain the method to obtain the A,B,C,D parameters of a model of a long transmission line in the laboratory.

(b) Discuss the series and shunt compensation of a transmission line.

Q9) Write short notes on the following :

(a) Overhead line insulators.

(b) Radial and mesh distribution networks.

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