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

B.Tech. (Sem. - 5th)

POWER SYSTEM - I

(Transmission and Distribution)

SUBJECT CODE : EE - 305

Paper ID : [A0415]

[Note : Please fill subject code and paper ID on OMR]

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.

Section - A

Q1) *(10 × 2 = 20)*

a) Compare dc and ac systems for transmission.

b) Explain briefly about Kelvins Law.

c) Write the advantages of Bundle conductors.

d) Find the loop inductance and reactance per km of a single phase overhead line consisting of two conductors, each 1.213 cm diameter. The spacing between conductors is 1.25m and frequency is 50 Hz.

e) What is ACSR conductors and up to what capacity of voltage they can be used?

f) Comparison between DC and AC system.

g) What are the Ratings of phase modifiers.

h) What is the cause of underground cable failure?

i) Classification of Underground cables.

j) What is the stringing of conductors?

Section - B

(4 × 5 = 20)

Q2) Explain about Mesh distribution network.

Q3) The following data refers to a 50 Hz, 3 phase transmission line :
Length ... 10 km
Sending end voltage .... 11 kV.
Load delivered at receiving end .... 1000 kW at 0.8 p.t lag.
Resistance of each conductor ....0.500 ohm/km
Reactance of conductor ..... 0.56 ΩVkm.
Then calculate
(a) Line current.
(b) Receiving end voltage.
(c) Efficiency of transmission.

Q4) Explain the Synchronous phase modifiers with their ratings in detail.

Q5) What are the various methods of lying the underground cables explain.

Q6) Discuss the equivalent 'T' circuit for long length line by hyperbolic equations.

Section - C

(2 × 10 = 20)

Q7) Explain surge impedance loading of a transmission line.

Q8) What is transposition and why is it done? Find the inductance per phase per km of double circuit 3-phase line shown in the Fig. 1 below. The conductors are transposed and are of radius 0.75 cm each. The phase sequence is ABC.

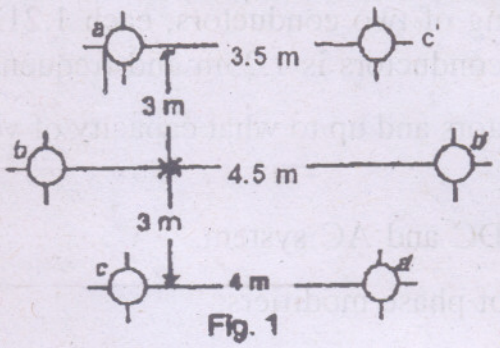

Fig. 1

Q9) Write notes on :
(a) String efficiency.
(b) Power Loci Transmission Line.
(c) Voltage regulation of transmission lines.

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