Exam.Code:0934
Sub. Code: 33758

2055

B.E. (Electrical and Electronics Engineering)

Fourth Semester

PC-EE-402: Power System - I

Time allowed: 3 Hours Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

a) Why are interconnected systems more stable and economical than isolated systems?

b) How does an increase in power factor influence heating loses in cables?

c) Why does increasing span length require more careful sag and tension calculations?

d) What do you mean by line leadability and reactive compensation? Name one technique used for reactive compensation.

e) Explain why are stranded conductors used in power lines? (5x2)

UNIT - I

II. a) Describe the layout of a typical power supply network. How do generation, transmission and distribution sections interact?

b) Compare and contrast different types of conductors used in transmission lines; Hard drawn copper, AAC, AAAC, ACSR and bundled conductors. (2x5)

III. a) What do you mean by string efficiency? Why is it necessary to have a high string efficiency? How can it be achieved?

b) A conductor is strong between two supports at a horizontal distance of 250m. The left support is 4m higher than the right. The conductor has a weights of 0.9 kg/m and horizontal tension is 1800 kgh. Find the sag on both sides. (2x5)

IV. a) Explain transposition of transmission line and skin effect.

b) Explain the phenomena of travelling waves in transmission lines. Derive the wave equation. (2x5)

UNIT - II

V. a) Explain the calculation of capacitance for solid cylindrical and stranded conductors in a transmission line.

b) A single-phase line as a solid cylindrical conductor of radius 1cm and an inductance of 1-2μH/m. calculate the spacing between conductors. (2x5)

P.T.O.

VI. a) Discuss the concept of maximum power transfer through transmission lines. What limits the power that can be transferred.

b) A 1-ϕ short transmission line is 40 km long. The line has impedance of z=0.5+j0.8 Ω/km. The receiving end load is 100A at 11kV and 0.9 power factor lagging. Calculate sending end voltage, voltage regulating and transmission efficiency. (2x5)

VII. Write notes on the following:-

a) Utility of equivalent π-circuit for transmission line.

b) Significance of series impedance and earth return in transmission line. (2x5)

x-x-x