Total No. of Questions : 10] [Total No. of Printed Pages : .

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EX–505(N)

B. E. (Fifth Semester) EXAMINATION, June, 2011

(Electrical & Electronics Engg. Branch)

POWER SYSTEM – I

[EX – 505(N)]

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt all questions. All questions carry equal marks.

Unit – I

1. (a) Discuss the basic structure of a power system network and choice of transmission voltage.

   (b) What are the major components of a thermal power station ? Give the names and their function.

Or

2. (a) Define and explain the terms load factor and diversity factor and discuss their effects on cost of generation of electricity.

   (b) Write a short note on economic load despatch.

Unit – II

3. (a) What is skin effect and proximity phenomenon in a conductor ?

(b) Derive an expression for the inductance per phase for a 3-phase overhead transmission line when the conductors are symmetrically placed.

Or

4. (a) Determine the most economical conductor diameter for a single core cable to be used or 33 kV, 3-phase system, if r. m. s. of maximum stress is not to exceed 40 kV/cm. Also calculate radial thickness of insulation.

   (b) Explain the following :

   (i) Capacitance grading

   (ii) Intersheath grading

Unit – III

5. (a) Explain how transmission lines are classified into short, medium and long line and explain their characteristics.

   (b) Derive . ABCD constants of a nominal-T model of transmission lines.

Or

6. (a) Write a short note on "Ferranti effect".

   (b) A transmission circuit is represented by a symmetrical 'π' network in which the series impedance is $120 \angle 60\ \Omega$ and each shunt admittance is $2{\cdot}5 \times 10^{-3} \angle 90$ S. Calculate :

   (i) The value of general circuit constant.

   (ii) The characteristic impedance of symmetrical 'π' network.

Unit – IV

7. (a) What are the different types of line supports in general ? What properties a line support should have ?

   (b) Write a short note on "Sag-tension" relationship.

Or

8. (a) Distinguish between pin type and suspension type insulators. Which type of insulator will be appropriate for extra high voltage lines and why ?

   (b) Express the voltage across each insulator as a % of line voltage to earth.

Unit – V

9. (a) How would you explain a substation ? Discuss the different ways of classifying the substations.

   (b) Enlist the major equipments of a typical 132 kV substation giving their application.

Or

10. (a) What are the different types of bus-bar arrangement ? Explain any *two* of them.

    (b) Write a short note on Kelvin's law for most economical size of conductor.