Roll No .....

EX - 505

B.E. V Semester

Examination, December 2014

Power System - I

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each questions are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) Define load factor.
   b) What do you know about diversity factor?
   c) Explain load duration curve and its utility.
   d) What are the Major Components of Thermal Power Station? Give the names and their function.

   OR

   Draw the schematic arrangement of hydroelectric plant and give the function of each unit.

2. a) Define skin effect.
   b) Write a short note on proximity effect.
   c) What is main requirement of insulating material for cable?
   d) What is meant by grading of cable? Explain why and how the grading of cable is done.

   OR

   Derive the expression for flux linkages of one conductor in a group of conductors.

3. a) Draw the T and Y networks of medium transmission line.
   b) Draw the phasor diagram for short transmission line with unity P.F. load.
   c) Classification of Transmission line on the basis of their length.
   d) A single phase O.H. transmission line delivers 1500 kw at 33 kv at .8 PF lagging. The total resistance and inductive reactance of lines are 10Ω and 15Ω respectively. Determine: i) Sending end voltage ii) Sending end p.f. iii) Efficiency of line.

   OR

   Derive expression for ABCD constants of a long transmission line.

4. a) Give the names of different types of line supports.
   b) Give the classification of insulator in brief.
   c) What do you about sag in Transmission line?
   d) Distinguish between pin type and suspension type insulator. Which type of insulator will be appropriate for extra high voltage lines and why?

   OR

   Derive an expression for sag and tension in a power conductor strung between Two supports at equal height.

5. a) What do you know about Kelvin's law?
   b) Define bus bar in brief.
   c) Give the name of main equipment required for a substation.
   d) How would you explain a substation? Discuss the different ways of classifying the substations.

   OR

   Write a short note (any two)

   i) Main and transfer for bus bar system
   ii) Sectionalized double bus bar system
   iii) Ring mains
   iv) Surge impedance

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