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***B.Tech. Degree VI Semester Special Supplementary Examination
August 2018***

**EE 601 POWER SYSTEMS I
(2006 Scheme)**

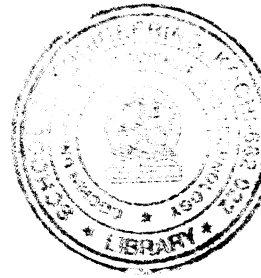
Time: 3 Hours

Maximum Marks: 100

**PART A
(Answer ALL questions)**

(8 × 5 = 40)

- I. (a) What is the importance of power factor tariff?
- (b) Explain the terms (i) Load factor (ii) Diversity factor (iii) Demand factor (iv) Plant utilization factor.
- (c) What are the factors which affect sag in overhead line?
- (d) Define string efficiency. Describe different methods for improving string efficiency.
- (e) State Kelvin's law for obtaining the size of conductor for transmission.
- (f) Write short notes on power quality.
- (g) A single phase line has two parallel conductors 1.5 meters apart. The diameter of each conductor is 1.4 cm. Calculate the loop inductance per km of the line.
- (h) Write a short note on capacitance grading in cables.



PART B

(4 × 15 = 60)

- II. Explain the operations of a thermal power station with a neat schematic diagram. (15)
- OR**
- III. (a) A generating station has a maximum demand 125 MW, load factor 60%, plant capacity factor 52% and a plant use factor of 70%. Calculate daily energy produced, reserve capacity of the plant, the maximum energy that can be produced daily if the plants are running all the time and the maximum energy that can be produced daily if the plants are fully loaded. (10)
 - (b) What are the objectives and requirements of a good tariff system? (5)
- IV. (a) Derive the expression for capacitance of a single core cable. (9)
 - (b) What are the requirements of a good distribution system? Give any three differences between underground system and overhead system. (6)
- OR**
- V. (a) What is corona? What are the different factors which affect corona? Suggest methods to minimize corona loss in transmission lines. (6)
 - (b) Calculate the horizontal component of tension and maximum sag for a span of 400 m if the maximum tension in the conductor is 3,200 kg and weight of the conductor is 670 kg/km. Also determine the location of the points on the conductor at which the sag will be half of the above value. (9)

(P.T.O.)

VI. Discuss the important design considerations in primary and secondary distribution systems. (15)

OR

- VII. (a) Explain the importance of energy management in power system. (5)
(b) Explain different types of distributors. (5)
(c) Write short note on ring main system. (5)

VIII. Derive the A, B, C, D constants of a medium transmission line using nominal T and π methods. (15)

OR

- IX. (a) Briefly explain any one method of voltage control in transmission lines. (6)
(b) Derive an expression for inductance of single phase overhead line. (5)
(c) What are the advantages of transposition in transmission lines? (4)
