

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2009**

EE-04—504—POWER SYSTEMS—I

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

1. (a) Discuss about power plant economies.
- (b) Write short notes on capacity of phase advancing plant.
- (c) Define impulse ratio and string efficiency.
- (d) Explain the different types of cables.
- (e) Discuss about the classification of distribution systems.
- (f) How will you calculate voltage drop in radial system ?
- (g) Write short notes on rigorous solution of long lines.
- (h) Give the diagrammatic representation of short, medium and long transmission lines using T method and state the difference.

(8 × 5 = 40 marks)

Module I

2. (a) Explain the need for selection and the choice of selection of thermal and nuclear power plants.
(8 marks)
- (b) Give detailed explanation of MHD generation in relation to different sources of energy.
(7 marks)

Or

- (a) Explain different types of tariff and factors influencing the rate of tariff designing.
(10 marks)
- (b) A generating station has a maximum demand of 35,500 kW and has a connected load of 65,000 kW. The number of units generated annually are 25.6×10^7 . Calculate (i) load factor ;
(ii) demand factor.
(5 marks)

Module II

3. Explain the arrangement of conductors, line support, their location and economic span in detail. Discuss the types of line insulators with neat diagram.
(15 marks)

Or

Turn over

- (a) What are the causes of low power factor? Discuss the effects of low power factor and advantages of power factor improvement. Explain in detail about any one of the methods of power factor improvement.

(12 marks)

- (b) State the disadvantages of corona.

(3 marks)

Module III

4. (a) Compare single-phase a.c. systems with d.c. distribution systems. (7 marks)

- (b) Show with a neat diagram how unbalanced loads in a 3-wire d.c. system cause unequal voltages on the two sides of the neutral.

(8 marks)

Or

- (a) Discuss briefly about the methods of solving a.c. distribution systems. (8 marks)

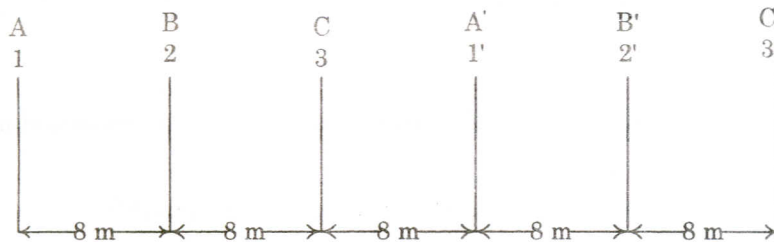
- (b) Describe briefly the different types of d.c. distributors. (7 marks)

Module IV

5. (a) Write short notes on bundled conductors. (5 marks)

- (b) Calculate the inductance per phase for a three-phase double circuit line whose phase conductors have a radius of 5.3 cm. with the horizontal conductor arrangement.

(10 marks)



Or

- (a) Give the representation of short and medium transmission lines. (10 marks)

- (b) Write short notes on ABCD constants. (5 marks)

(5 marks)

[4 × 15 = 60 marks]