D 23441-A (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2011

EE 04 504—POWER SYSTEM

(2004 admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

Part A

I. (a) Discuss about MHD power generation in brief.

(b) Define conventional and non-conventional sources of energy.

(c) Write short notes on arcing horns and rings in overhead transmission system.

(d) Give the advantages and disadvantages of corona.

(e) With a neat diagram, explain distribution systems.

(f) Compare single-phase AC and DC systems.

(g) How will power flow through a transmission line ?

(h) Write short notes on bundled conductors ?

(8 × 5 = 40 marks)

Part B

Module I

II. (a) A power station is to supply four regions of loads whose peak loads are 10,000 kW, 5,000 kW, 8,000 kW and 7,000 kW. The diversity factor is 1.5 and average annual load factor is 60 %. Calculate the maximum demand on station and the annual energy supplied from the station, suggest the installed capacity and the number of units taking all aspects into account.

(8 marks)

(b) Explain the advantages and principle of MHD power generation. (7 marks)

Or

(a) Compare nuclear, diesel, hydro and thermal power plants. (8 marks)

(b) Write in detail about the economics of p.f. improvement and discuss about the capacity of phase advancing plant.

(7 marks)

Module II

III. (a) How will you lay and test a cable ? Discuss. (7 marks)

(b) Explain about grading of cables with neat diagram. Discuss about sheath effects.

(8 marks)

Or

Turn over

(a) What are the different types of line insulator ? Discuss about any *one* in detail. (8 marks)

(b) Define the terms disruptive critical voltage, corona, string efficiency and impulse ratio. Write notes on failure of insulation.

(7 marks)

Module III

IV. (a) Discuss about the classification and arrangement of distribution systems. Expalin with a neat diagram.

(8 marks)

(b) Explain about the voltage drop calculation in radial main system and ring main systems.

(7 marks)

Or

(a) Explain the calculation of three-phase 3 wire systems including the effects of sag and tension.

(10 marks)

(b) Compare the above given system with three-phase, 4-wire system. (5 marks)

Module IV

V. (a) A single-phase line has two parallel conductors 2 metres apart. The diameter of each conductor is 1.2 cm. Calculate the loop inductance per km. of the line.

(5 marks)

(b) The three conductors A, B and C of a 3ϕ line are arranged in a horizontal plane with $D_{AB} = 2$ m. and $D_{BC} = 2.5$ m. Find line to neutral capacitance per km. if diameter of each conductor is 1.24 cm. The conductors are transposed at regular intervals.

(10 marks)

Or

(a) Explain medium transmission lines and calculate the performance by explaining any one method.

(10 marks)

(b) Compare the rest methods with the above method and draw the diagrams wherever required.

(5 marks)

[4 × 15 = 60 marks]