

**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2006****EE 2K 604—POWER SYSTEMS—I**

Time : Three Hours

Maximum : 100 Marks

*Answer all questions.***Part A**

1. (a) Draw the schematic diagram of nuclear power plant and explain the stages.
- (b) Describe the terms "load factor" and "demand factor".
- (c) Write short notes on string efficiency.
- (d) Discuss the advantages and disadvantages of corona.
- (e) State Kelvin's law and describe.
- (f) Describe the classifications and arrangement of distribution system.
- (g) Describe the term "transposition".
- (h) Derive the equation for computing power flow through a transmission line.

(8 × 5 = 40 marks)

Part B**Unit I**

2. (a) Describe with neat diagram, the principle of power generation from the following renewable energy sources :—
 - (i) Solar.
 - (ii) Wind.
 - (iii) Geothermal.

Or

- (b) Describe with neat diagram, the principle of power generation from the following renewable energy sources :—
 - (i) Tidal.
 - (ii) Magneto hydrodynamic.
 - (iii) Fuel cell.

Unit II

3. (a) What is grading of cable ? Explain
 - (i) Capacity grading.
 - (ii) Intersheath grading.

*Or***Turn over**

- (b) Derive the expression for the capacitance of 3 core cable.

Unit III

4. (a) A two wire DC distributor supplies the following loads :—

Load in amperes	:	20	30	80	50
Distance from supply end (in meters)	:	50	100	200	300

If the supply end voltage is 250 V. Calculate the voltage at the different load points. The resistance of the distributor is 0.001Ω per conductor per meter.

Or

- (b) A two wire distributor 500 m. long is loaded as shown in Fig. 1. It is fed at end A. The voltage at the feeding end is 220 V. If the maximum voltage drop allowed is 5 % of the supply voltage, calculate the cross-sectional area of the conductor to be used. Take the resistivity of copper as $\frac{1}{50} \Omega$ per meter per sq. mm.

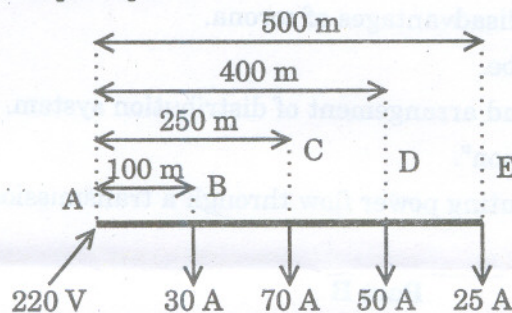


Fig. 1

Unit IV

5. (a) Determine the inductance of the double circuit line shown in Fig. 2. The self GMD of the conductor is 0.0069 metre.

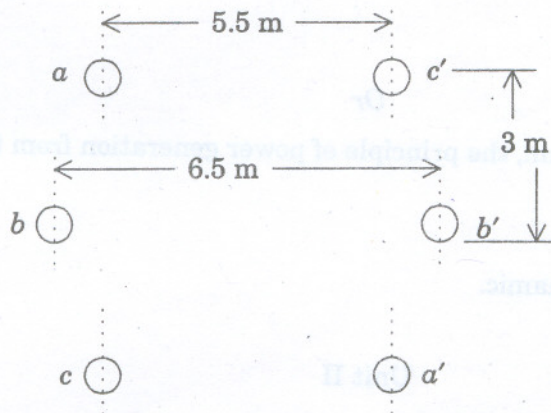


Fig. 2

Or

- (b) Explain the effect of earth on the capacitance of single-phase and three-phase transmission line.

(4 × 15 = 60 marks)