Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

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B.Tech. (Electronics Engg.) (OE 2012 Onwards) (Sem.–6)

ELEMENTS OF POWER SYSTEMS

Subject Code : BTEEE-OPC

M.Code : 72840

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) What are the factors to be considered for bus bar design?

b) What is the reason for sag in transmission line?

c) List the advantages of high voltage transmission.

d) What is the function of sheath in cables?

e) What is a bundle conductor? What are its advantages?

f) Define transmission efficiency.

g) List out the common methods of representation of medium transmission lines.

h) What is surge impedance loading or natural loading?

i) What are the voltages regulating equipments used in transmission systems?

j) What are the causes of voltage drop and line loss in a transmission line?

SECTION-B

2. Draw the model power system with single line representation. Show its essential constituent sections.

3. A conductor is composed of seven identical copper strands each having a radius r. Find the self-GMD of the conductor.

4. What are ABCD constants?

5. Draw the schematic diagram of a pin type insulator and explain its function.

6. Derive expressions for sag and tension in a power conductor strung between to supports at equal heights taking into account the wind and ice loading also.

SECTION-C

7. A 50Hz transmission line 300 km long total series impedance of 40 + j25 Ω and total shunt admittance of 10-3 mho. The 220 KV with 0.8 lagging power factor. Find the sending end voltage, current, power and power factor using nominal pi method.

8. A transmission line conductor at a river crossing is supported from two towers at a height of 50 and 80 m above water level. The horizontal distance between the towers is 300 m. if the tension in the conductor is 2000 kg. Weight of conductor/m = 0.844 kg. Find the clearance between the conductor and water at a point midway between the towers.

9. Find the capacitance between the conductors of a single-phase 10 km long line. The diameter of each conductor is 1.213cm. The spacing between conductors is 1.25m. Also find the capacitance of each conductor neutral.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.