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Total No. of Pages : 02

Total No. of Questions : 09

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 two 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 $40 + j25 \Omega$ 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.