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

Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (Electrical & Electronics Engg.) (2013 & Onwards) (Sem.–7)

HIGH VOLTAGE ENGINEERING

Subject Code : BTEE-802

M.Code : 75827

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

Write briefly :

1. Define the tuned power line.
2. Derive the expression of bipolar corona loss.
3. State the principle of insulation co-ordination.
4. Enlist any four converter station equipment.
5. Explain the term electron attachment in gases.
6. Write any four name of insulating liquid used in high voltage equipments.
7. Define 1st ionization coefficient.
8. Define the tripping and contact of impulse generator.
9. Define the front and tail times of an impulse wave.
10. Define the intrinsic strength of solid dielectric.

SECTION-B

11. Explain the different scheme used for shunt compensation in EHV lines using electrical circuit and phase diagram.

12. State and explain Paschen's Law. Derive expression for (pd) min and Vbmin. Assume A = 12, B = 365, and $\gamma = 0.02$ for air. Determine (pd)min and Vbmin.

13. How is a lossy dielectric represented in the form of a circuit model explain it in detail?

14. Indicate the solid insulation application in a) power cable b) power transformer.

15. An electrostatic voltmeter has two parallel plates. The movable part is 10 cm in diameter. With 10 kV between the plates, the pull is 5 × 10-3 N. Determine the change in capacitance for a movement of 1 mm of movable plate.

SECTION-C

16. Why is a Cock-Craft Walton circuit preferred for voltage multiplier circuits? Explain its working with a schematic diagram.

17. Discuss the effect of the following parameters on the break down strength of liquid :

    a) Hydrastatic pressure

    b) Solid impurities

    c) Moisture content in the oil

18. Write short notes on the following :

    a) Series and shunt compensation in EHV lines

    b) Thermal breakdown of composite dielectrics.

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.