Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions : 09

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

1. **Write briefly :**

    a. What is the need of bundled conductors in EHV transmission?

    b. How corona loss affect radio interference?

    c. Which insulation is used in high voltage circuit breakers of large power rating? Also name the commonly used liquid for transformer insulation.

    d. Define the Time lag for breakdown in gas dielectrics.

    e. Where the Epoxy resins are used for insulation purpose?

    f. Which property of liquid is important to be used for cooling purpose and electrical insulation?

    g. Tesla coil is used for which type of generation?

    h. Name the two main factors which affect the spark over voltage of sphere gap.

    i. Which measuring device is used for the measurement of impulse currents of short duration?

    j. Which type of surge diverter is used for overvoltage protection in EHV system?

SECTION-B

2. Define Townsend's first and second ionization coefficients. How the condition of breakdown is obtained in Townsend discharge.

3. What are the factors that affect conduction in pure and commercial liquid dielectrics? Also explain in brief suspended particle theory of breakdown in liquid dielectrics.

4. What is thermal breakdown in solid dielectrics and how is it more significant than other breakdown mechanisms?

5. Explain different applications of insulating materials in rotating machines.

6. A 12-stage impulse generator has $0.126\mu F$ capacitors. The wave-front and wave-tail resistances connected are 800 ohms and 5000 ohms respectively. If the load capacitor is 1000pF, find the front and tail times of the impulse wave produced.

SECTION-C

7. Name and explain the different advantages of HVDC Transmission.

8. Explain the need of EHV transmission, also write an explained note on shunt and series compensation in EHV lines.

9. Explain in detail how a sphere gap can be used to measure the peak value of voltages? Also explain different parameters and factors that affect this voltage measurement.

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.