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

Total No. of Questions : 09

B.Tech.(Electronics & Electrical Engg.)   (Sem.–7,8)
B.Tech. (EE) (2012 Onwards)
HIGH VOLTAGE ENGINEERING
Subject Code : BTEE-802
M.Code : 71931

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.   Define insulation Co-ordination.

   b.   Define corona in transmission line.

   c.   Draw high voltage impulse with standard rating.

   d.   Enlist the different method of measurement of high voltage direct current.

   e.   Write **any four** advantages of bundling of conductors.

   f.   State the Streamer theory of breakdown.

   g.   Enlist the type of direct current links.

   h.   Define the tripping and contact of the impulse generator.

   i.   Write **any four** disadvantages of HVDC transmission.

   j.   Defined the tuned power line.

SECTION-B

2. What is Paschen's law? Explain the condition of break down.

3. A 12-stage–impulse generator has 0.126 micro farad capacitors. The wave front and wave tail resistances connected are 800 ohms and 5000 ohms respectively. If the loadcapacitor is 1000 pf, find the front and tail times of the impulse wave produced.

4. Explain the properties of composite dielectrics and also explain the different breakdown mechanism of composite dielectrics.

5. Explain the demerits of corona. What are the preventive measures against corona?

6. Explain the types of different DC links in HVDC.

SECTION-C

7. a. Explain and derive Townsend's first ionization coefficient. How is the condition for break down obtained in a Townsends discharge?

   b. A steady current of 600 micro ampere flows through the plane electrodes separated by a distance of 0.5 cm when a Voltage of 10 kV is applied. Determine the Townsend's first ionization coefficient if a current of 60 pA flows when the distance of separation is reduced to 0.1 cm and the field is kept constant at previous value.

8. Enumerate the classification of insulating materials as per International Electrotechnical Commission (IEC) mentioning two examples for each class.

9. a. Explain how a sphere gap can be used to measure the peak value of voltages. What are the parameters and factors that influences such voltage measurement?

   b. Explain resistance potential divider for very low impulse voltages with circuit diagram. Why compensated resistance potential divider is used explain it with circuit diagram?

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.