Reg. No. : | | | | | | | | | | | | |

Question Paper Code : X 60507

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020
Sixth Semester
Electrical and Electronics Engineering
EE 2353 – HIGH VOLTAGE ENGINEERING
(Regulations 2008)
(Common to PTEE 2353/High Voltage Engineering for B.E. (Part-Time)
Fifth Semester – Electrical and Electronics Engineering – Regulations 2009)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. What are the factors that influence the lightning induced voltage on transmission line ?

2. Why is simple spark gap cannot offer full protection against over voltages ?

3. What is meant by corona discharges ?

4. What are electronegative gases ?

5. Write about the Deltatron circuit.

6. Give some merits of Vande Graff generator.

7. Explain the basic principle of Hall generator.

8. List some advantages of Faraday generator.

9. Define disruptive discharge voltage.

10. Mention the characteristics of the spray used in wet flashover test.

PART – B **(5×16=80 Marks)**

11. a) i) What are the sources of switching surges ? Explain the characteristics of switching surges with typical wave shapes. **(10)**

ii) Discuss the various controlling methods of over voltages due to switching and power frequency. **(6)**

(OR)

b) i) A long transmission line is energized by a unit step voltage of 1.0 V at the sending end and is open circuited at the receiving end. Construct the Bewley Lattice diagram and obtain the value of the voltage at the receiving end after a long time. Take the attenuation factor $\alpha = 0.8$. **(10)**

ii) Write a short note on ground rods as protective devices. **(6)**

12. a) i) Discuss the important properties of composite dielectrics. **(6)**

ii) Discuss the various mechanism of breakdown in composite dielectrics. **(10)**

(OR)

b) State why the very high intrinsic strength of a solid dielectrics is not fully realized in practice. Explain the different mechanisms by which breakdown occurs in solid dielectrics in practice. **(16)**

13. a) Explain with neat sketches Cockroft-Walton voltage multiplier circuit. Explain clearly its operation when the circuit is

i) unloaded and

ii) loaded

(OR)

b) i) Explain one method of controlled tripping of impulse generators. Why is controlled tripping necessary. **(8)**

ii) What is a cascaded transformer ? Explain why cascading is done. Describe with neat diagram, a 3 stage cascaded transformer. **(8)**

14. a) Explain in detail the various techniques for the measurement of High DC voltages. **(16)**

(OR)

b) With neat sketch explain in detail the various methods used to measure the RMS and peak values of High AC voltage. **(16)**

15. a) Explain the various tests conducted in high voltage insulators. **(16)**

(OR)

b) Explain the tests conducted on high voltage cables. **(16)**

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