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

Question Paper Code : 20466

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Seventh Semester

Electrical and Electronics Engineering

EE 6701 – HIGH VOLTAGE ENGINEERING

(Regulations 2013)

(Common to : PTEE 6701 – High Voltage Engineering for B.E. (Part – Time) Fifth Semester – Electrical and Electronics Engineering – Regulations – 2014)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the causes of over voltages in power system?
2. List the sources of switching over voltage in power system.
3. What are electronegative gases?
4. Write the Paschen's Law.
5. Give the expression for effective inductance of distributed inductors in impulse current generator.
6. What are the specifications for standard impulse voltage?
7. What is Rogowski coil? Give its limitations.
8. How is stray effect reduced in resistive shunt type of measurement?
9. What is the difference between type and routine test?
10. State the importance of insulation coordination in power system.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Explain the technique of modeling the lightning. (8)

(ii) Discuss in detail the characteristics of switching surges with necessary waveforms. (5)

Or

(b) Explain in detail the protection of power system equipments using protective devices.

12. (a) Explain in detail the breakdown mechanism in non-uniform fields and phenomenon of corona.

Or

(b) Explain about the breakdown mechanisms in solid dielectrics with neat sketches.

13. (a) What is the principle behind the electrostatic energy conversion methods? Explain the construction and operation of Vandegraff generator with neat diagrams.

Or

(b) (i) Write a brief note on resonant transformer. (8)

(ii) How is impulse current generated using capacitor bank? Explain it in detail. (5)

14. (a) With a neat diagram explain the sphere gap arrangement method of high voltage measurement in detail and give the factors influencing the measurement.

Or

(b) Tabulate and explain the methods used for the measurement of high voltages and high currents.

15. (a) Explain in detail the power frequency and impulse voltage test need to be conducted on bushings with necessary diagrams.

Or

(b) Discuss in detail the dielectric power factor test and partial discharge test procedures for high voltage cables.

PART C — (1 × 15 = 15 marks)

16. (a) What are the tests need to be conducted on isolators and circuit breakers? Explain them in detail.

Or

(b) Explain in detail the origin and characteristics of switching surges and explain the causes of over voltage due to switching surges in EHV and UHV system with a suitable Illustration.

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