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Question Paper Code : X 67580

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
Seventh Semester
Electrical and Electronics Engineering
EE 1003 A – HIGH VOLTAGE ENGINEERING
(Regulations 2008)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Why the tower footing resistance should be low ?
2. Define isokeraunic level.
3. What is Paschen's law ?
4. What are commercial liquid dielectrics ?
5. Draw the circuit for producing impulse wave.
6. What is tesla coil ?
7. Mention the methods available for power frequency high voltage measurement.
8. Write any two advantages of electrostatic voltmeter.
9. What is meant by insulation coordination ?
10. Define the term 'withstand voltage' as referred to high voltage testing.

PART – B

(5×16=80 Marks)

11. a) i) Explain the causes of power frequency over voltages in power system. (10)
ii) How are the charges formed in the cloud ? Explain. (6)
(OR)
- b) i) Explain the modeling method of lightning in detail. (10)
ii) What are the sources and characteristics of switching surges ? (6)



12. a) Explain the primary and secondary ionization process of gaseous dielectrics. **(16)**
(OR)
- b) Explain in detail, the various solid dielectric breakdown mechanisms. **(16)**
13. a) Explain the different schemes for cascade connection of transformers for producing very high a.c. voltages. **(16)**
(OR)
- b) A Cockcroft-Walton type voltage multiplier has eight stages with capacitances all equal to $0.05 \mu\text{F}$. The supply transformer secondary voltage is 125 KV at a frequency of 150 Hz. If the load current to be supplied is 5 mA, find (i) the percentage ripple, (ii) the regulation and (iii) the optimum number of stages for minimum regulation or voltage drop.
14. a) Construct and describe the principle of electrostatic voltmeter. **(16)**
(OR)
- b) i) Mention and explain the various arrangements of sphere gap measurements with neat sketch. **(10)**
ii) Describe the high DC current measurement using Hall generators. **(6)**
15. a) With a suitable case study, explain high voltage testing of electrical power apparatus. **(16)**
(OR)
- b) With suitable illustrations, explain International and Indian standards in high voltage testing. **(16)**
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