

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-116
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (EEP/EE/EEE)
High Voltage Engineering
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

1. Question.No.1 & Question No.6 are compulsory.
2. Attempt any two questions from remaining questions of each section.
3. Assume suitable data wherever necessary.

SECTION A

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|-----|--|---------------------|
| Q.1 | Solve any five. | 10 |
| | <ol style="list-style-type: none"> a) Define the types of collision processes. b) Explain in short the term 'electron attachment'. c) What are electronegative gases? d) State electrical properties of liquid dielectrics. e) What are commercial liquid dielectrics? f) What are parameters that affect the breakdown strength of liquids? g) What do you understand by 'intrinsic strength' of a solid dielectric? h) What is composite dielectric? | |
| Q.2 | <ol style="list-style-type: none"> a) Explain the procedure to control electric field intensity in HV equipment. b) Discuss the 'Charge Simulation Method' for solving Field Problems and estimation of potential distribution. | <p>07</p> <p>08</p> |
| Q.3 | <ol style="list-style-type: none"> a) Define Townsend's first and second ionization coefficients. How is the condition for breakdown obtained in a Townsend discharge? b) What is Paschen's law? Explain in details. | <p>07</p> <p>08</p> |
| Q.4 | <ol style="list-style-type: none"> a) Explain the different methods and means for purification of liquid dielectrics. b) What are the common liquid insulants used in an electrical apparatus? Briefly give their physical properties. | <p>07</p> <p>08</p> |
| Q.5 | <ol style="list-style-type: none"> a) Describe the mechanism of short-term breakdown of composite insulation. b) Explain the phenomenon 'treeing and tracking' in solid insulating materials under electrical stress. How does it lead to breakdown? | <p>07</p> <p>08</p> |

"SECTION-B"

- Q.6 Solve any five. 10
- What are the advantages of CVT measurement in HVAC?
 - What is Rogowski coil?
 - List out the components of multistage impulse generator.
 - Define impulse current.
 - Draw the circuit diagram of capacitance potential divider.
 - List out the different theories of charge formation in clouds.
 - Define creepage distance.
 - What is loss tangent?
- Q.7 a) Describe with a neat sketch, the working of a Van de Graaff generator. 07
b) What is a Tesla coil? How are damped high-frequency oscillations obtained from the Tesla coil? 08
- Q.8 a) What is capacitance voltage transformer (CVT)? Explain with phasor diagram how a tuned CVT can be used for voltage measurements in power systems. 07
b) Explain different methods of high current measurements with their relative merits and demerits. 08
- Q.9 a) What are the causes for switching and power frequency overvoltages? How are they controlled in power systems? 07
b) What is a surge arrester? Explain its function as a shunt protective device. 08
- Q.10 a) Explain the high-voltage Schering-bridge for capacitance measurement of insulators or bushings. 07
b) Discuss the different electrical tests done on isolators and circuit breakers. 08