

Total No. of Printed Pages:02

**SUBJECT CODE NO:- H-116**  
**FACULTY OF ENGINEERING 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"> <li>a) Define the types of collision processes.</li> <li>b) Explain in short the term ‘electron attachment’.</li> <li>c) What are electronegative gases?</li> <li>d) State electrical properties of liquid dielectrics.</li> <li>e) State the application of insulating material in power cables.</li> <li>f) What is difference between insulation and dielectrics?</li> <li>g) What is treeing and tracking?</li> <li>h) State applications of insulating materials.</li> </ol> |          |
| Q.2 | <ol style="list-style-type: none"> <li>a) Explain the procedure to control electric field intensity in HV equipment.</li> <li>b) Discuss the ‘Charge Simulation Method’ for solving Field Problems and estimation of potential distribution.</li> </ol>  | 07<br>08 |
| Q.3 | <ol style="list-style-type: none"> <li>a) Describe the current growth phenomenon in a gas subjected to uniform electric fields.</li> <li>b) What is Paschen’s law? Explain in details.</li> </ol>  | 07<br>08 |
| Q.4 | <ol style="list-style-type: none"> <li>a) Discuss the factors that influence conduction in pure liquid dielectrics and in commercial liquid dielectrics.</li> <li>b) What are the common liquid insulants used in an electrical apparatus? Briefly give their physical properties.</li> </ol>  | 07<br>08 |
| Q.5 | <ol style="list-style-type: none"> <li>a) What is ‘thermal breakdown’ in solid dielectrics, and how is it practically more significant than other mechanisms?</li> <li>b) Explain the phenomenon ‘treeing and tracking’ in solid insulating materials under electrical stress. How does it lead to breakdown?</li> </ol>   | 07<br>08 |

**“SECTION-B”**

- Q.6 Solve any five. 10
- State different forms of high voltages.
  - Draw the circuit diagram of full wave rectifier.
  - What are the limitations of series resistance micrometer?
  - Draw schematic diagram of a generating voltmeter (rotating vane type).
  - 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
- Explain with diagrams, different types of rectifier circuits for producing high dc voltages. 07
  - What is a Tesla coil? How are damped high-frequency oscillations obtained from the Tesla coil? 08
- Q.8
- Discuss briefly the different methods of measuring high dc voltages. What are the limitations of each method? 07
  - Explain different methods of high current measurements with their relative merits and demerits. 08
- Q.9
- Explain the different theories of charge formation in clouds. 07
  - What is a surge arrester? Explain its function as a shunt protective device. 08
- Q.10
- Define ‘complex permittivity’. What are the factors that govern the quantities ‘relative permittivity’ and ‘loss factor’? 07
  - Discuss the different electrical tests done on isolators and circuit breakers. 08