Code No: 138CP **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, September - 2020
HIGH VOLTAGE ENGINEERING
(Electrical and Electronics Engineering)

Time: 2 Hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks
- - -

1.a) Explain how electric fields can be calculated using Charge Simulation Method (CSM).
b) List and explain the various insulating materials used in Rotating machines. [8+7]

2.a) Explain how the potential distribution can be determined by Electrolytic tank method.
b) What is the importance of Insulating materials and give its classification with examples of each type. [8+7]

3.a) Explain how "internal discharge" phenomena will lead to breakdown in solid dielectrics.
b) What is "stressed oil volume theory", and how does it explain breakdown in large volumes of commercial liquid dielectrics? [7+8]

4.a) What are the anode and the cathode streamers? Explain the mechanism of their formation and development leading to breakdown.
b) Explain the phenomena of breakdown due to treeing and tracking in Solid Dielectrics. [7+8]

5.a) Explain how a sphere gap can be used to measure the peak value of voltages. What are the parameters and factors that influence such voltage measurement?
b) Derive the expression for ripple and regulation in voltage multiplier circuits. How are these ripple and regulation minimized? [8+7]

6.a) Explain the operation of a resonant transformer and how is it advantageous over the cascade connected transformers.
b) A 12-stage impulse generator has 0.2 μF condensers. The wave front and the wave tail resistances connected are 700 Ω and 6000 Ω respectively. If the load condenser is 1200 PF, find the front and tail times of the impulse wave produced. [8+7]

7.a) List the different power frequency tests done on insulators and explain the procedure for its testing.
b) What is "Wagner's earthing device" and how is it used for eliminating stray capacitances? [8+7]

8.a) What is a surge diverter ? Explain its function as a shunt protective device.
b) Explain the mechanism of lightning strokes. [8+7]

---ooOoo---