Code No: 127DQ

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, November/December - 2018
HIGH VOLTAGE ENGINEERING
(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a)	How is transformer Insulation divided?	[2]
b)	Discuss about Uniform and Non uniform fields.	[3]
c)	Define Composite Dielectric.	[2]
d)	What are the differences between pure and commercial liquids?	[3]
e)	What is a Tesla Coil?	[2]
f)	Explain the conditions to be satisfied by a potential divider to be used for impulse voltage measurements.	[3]
g)	What are the origins of switching surges?	[2]
h)	What are the methods employed for lightning protection of OH lines?	[3]
i)	How is lossy dielectric represented?	[2]
j)	Explain the terms Withstand voltage and Flash over voltage.	[3]

PART - B
(50 Marks)

2.a) Explain how the electric stress can be estimated and controlled
b) Indicate the solid insulation applications in high voltage bushings. [5+5]

OR

3.a) Mention the temperature classification for solid insulating materials.
b) What is Boundary Element Method? How does it differ from Charge Simulation Method? [5+5]

4. Explain the process of ionization by collision in gaseous discharge. [10]

OR

5.a) Explain the various mechanisms of breakdown pheonomenon in commercial liquids
b) Explain how treeing and tracking leads to breakdown in solid insulating materials. [5+5]

6.a) Explain different methods for generation of high frequency AC voltages.
b) What is meant by potential divider? How it is used for impulse voltage measurements. [5+5]

OR

7. Draw the Marx circuit arrangement for multistage impulse generators. How is the basic arrangement modified to accommodate the wave time control resistances? [10]

8. Give the mathematical models for lightning discharges and explain them. [10]

OR

9. Explain the importance of switching overvoltages in EHV power systems. How is the protection against over voltages achieved? [10]

10.a) Explain the impulse testing of high voltage transformers.

b) Explain the importance of Radio interference voltage measurements for EHV power apparatus. [5+5]

OR

11. Explain with a neat sketch, the high voltage Schering bridge for the tan δ and capacitance measurement of insulators or bushings. [10]

--ooOoo--