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Reg. No. : | | | | | | | | | | |

Question Paper Code: 59303

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2019

Elective

Electrical and Electronics Engineering

15UEE903- HIGH VOLTAGE ENGINEERING

(Regulation 2015)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 3 = 15 Marks)

1.	List the different types of over voltages on power system	CO1- U
2.	Enumurate the properties required for a gaseous dielectric for HV application	CO2- R
3.	State the necessity of generating high dc voltage.	CO3- U
4.	Mention the factors influencing the measurements using sphere gap.	CO4- U
5.	Distinguish between flashover and puncture	CO5- U

PART – B (5 x 14= 70 Marks)

6.	(a)	State the mechanisms by which lightning strokes develop and induce over voltages on overhead power lines. Give the mathematical models for lightning discharges and explain them	CO1-U	(14)
		Or		
	(b)	Mention the causes for switching and power frequency over voltages.How are they controlled in power system?	CO1-Ana	(14)
7.	(a)	With neat sketch, Discuss the various mechanisms of vacuum break down	CO2-Ana	(14)
		Or		
	(b)	Illustrate in detail about break down in commercial liquid dielectrics	CO2-Ana	(14)
8.	(a)	With a neat sketch, Illustrate about the working of a Van de Graff generator for producing very high voltages	CO3-U	(14)

Or

	(b)	Give the Marx circuit arrangement for multistage impulse generators. How is the basic arrangement modified to accommodate the wave time control resistances	CO3-U	(14)
9.	(a)	Describe the construction, principle of operation of a Generating voltmeter and give its applications and limitations.	CO4-U	(14)

Or

	(b)	(i) Construct with neat circuit diagram of capacitance potential transformer and explain its operation.	CO4-U	(10)
		(ii) Discuss the merits and demerits of generating voltmeter method.	CO4-U	(4)
10.	(a)	(i) Explain the different types and nature of test conducted for	CO5-U	(7)
		(ii) Analyze in detail about the insulation coordination system.	CO5-U	(7)

Or

	(b)	Mention the different power frequency tests done on insulators. Mention the procedure for testing.	CO5-U	(14)

PART – C (1 x 15= 15Marks)

11.	(a)	A Cockcroft-Walton type voltage multiplier has eight stages with capacitances, all equal to 0.05 pF. 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 (a) the percentage ripple, (b) the regulation, and (c) the optimum number of stages for minimum regulation or voltage drop.	CO1-U	(15)

Or

	(b)	Discuss how a sphere gap can be used to measure the peak value of voltages with neat sketch.	CO3-U	(15)