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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 2020

Course Code:EE369

Course Name: HIGH VOLTAGE ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks. Marks

1		Describe with a neat diagram, the working of a simple voltage doubler circuit and its waveforms.	(5)
2		Draw the circuit diagram and mention advantages of resonant transformers used in high voltage AC generation.	(5)
3		Define impulse voltage? Draw a standard impulse wave form.	(5)
4		Explain two methods of measuring impulse current.	(5)
5		Explain the following terms: i) Withstand voltage ii) Flashover voltage iii) Creepage distance iv) Disruptive discharge voltage	(5)
6		What is non -destructive testing of insulating materials?	(5)
7		List the various tests performed on H.V cables?	(5)
8		Explain one power frequency test and one impulse voltage test on Insulators.	(5)

PART B

Answer any two full questions, each carries10 marks.

9		Explain the working of a Cockcroft -Walton circuit with a neat diagram.	(10)
10	a)	What is a Cascaded Transformer? Why cascading is done?	(5)
	b)	With neat diagram explain a three stage Cascaded Transformer. Label the power ratings of various stages of the transformer.	(5)
11	a)	A eight stage Cockraft-Walton circuit has all capacitors of 0.05 μF. The secondary voltage of the supply transformer is 125 kV at a frequency of 150 Hz. If the load current is 5 mA determine i) the % ripple ii)voltage regulation	(5)
	b)	Explain the generation of high frequency oscillations from a tesla coil?	(5)

PART C

Answer any two full questions, each carries 10 marks.

12	a)	With a schematic describe operation of a Marx impulse generator used for producing high impulse voltage.	(6)
	b)	Draw the basic circuit of Impulse current generator and explain its working.	(4)

13		Discuss various resistance potential dividers and compare their performance of measurement of impulse voltages.	(10)
14	a)	Explain with a circuit, the generation of rectangular current pulse of high magnitude.	(5)
	b)	Explain with neat diagram the principle of operation of an Electrostatic Voltmeter.	(5)

PART D

Answer any two full questions, each carries 10 marks.

15	a)	Derive the equation for loss tangent. Use relevant phasor diagrams	(5)
	b)	Explain the high voltage Schering –bridge for the loss tangent and capacitance measurement of insulators or bushing.	(5)
16	a)	Write a note on the classification of High voltage laboratory.	(5)
	b)	What are the criteria used in selecting the ratings of the testing equipment for h.v. labs?	(5)
17	a)	Explain partial discharge measurement with neat circuit	(5)
	b)	What are the precautions that are to be taken while grounding an impulse generator?	(5)

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