Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

Course Code:EE369

Course Name: HIGH VOLTAGE ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries5 marks. Marks

1		What are the different rectifier circuits used for generating high D.C voltages and draw the circuit of a voltage doubler circuit and its wave forms.	(5)
2		What is the principle of operation of resonant transformers? What are its advantages over other transformers?	(5)
3		What is the need for generating high impulse currents? Draw the basic circuit of Impulse current generator.	(5)
4		Explain the working of electrostatic voltmeter with neat diagram.	(5)
5		Draw the circuit of a Schering Bridge. What are the applications of Schering Bridge?	(5)
6		What is non -destructive testing of insulating materials?	(5)
7		List the various tests performed on H.V cables?	(5)
8		Howratings of testing equipment are selected in H .V laboratories?	(5)

PART B

Answer any two full questions, each carries 10 marks.

9		Explain the working of a Cockcroft -Walton circuit with a neat diagram.	(10)
10	a)	Explain the generation of high frequency oscillations from a tesla coil?	(6)
	b)	Derive the expression for the output voltage of a tesla coil.	(4)
11	a)	With a schematic diagram explain the working of a circuit producing very high a.c voltages.	(5)
	b)	Explain the construction and working of single unit testing transformer.	(5)

PART C

Answer any two full questions, each carries10 marks.

12	a)	Derive an expression for the voltage of a single stage impulse generator.	(6)

	b)	How circuit inductance is controlled in impulse current generator?	(4)
13	a)	Explain how a sphere gap can be used to measure the peak value of voltages?	(6)
	b)	What are the parameters and factors that influence the measurements using sphere gap?	(4)
14	a)	Draw Chubb-Fortescue circuit for measurement of peak value of a.c voltages and discuss its advantages over other methods.	(5)
	b)	Draw the simplified equivalent circuit of a resistance potential divider and explain its working.	(5)

PART D

Answer any two full questions, each carries 10 marks.

15	a)	With a neat diagram explain the impulse testing on the power transformer	(5)
	b)	Draw the equivalent circuit of an insulating material and derive an expression for the loss tangent, starting from first principles.	(5)
16	a)	Explain the measurement of Radio Interference Voltage with neat diagram.	(5)
	b)	What are the basic classifications of High Voltage laboratories? What are the basic facilities available in High Voltagelaboratories?	(5)
17	a)	What are the precautions that are to be taken while grounding an impulse generator?	(4)
	b)	Draw the layout of a typical high voltage laboratory with 1MV cascade transformer and 3MV impulse generator.	(6)

****