## APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

# FIFTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

**Course Code: EE 369** 

Max. Marks: 100 Duration: 3 Hours

		PART A	
		Course Name: HIGH VOLTAGE ENGINEERING	Marks
1		Explain the generation of high voltage DC voltage using rectifier circuit	(5)
2		How are damped high frequency oscillations obtained from a Tesla Coil?	(5)
3		Explain the working of single stage impulse generator. What are its limitations?	(5)
4		Why capacitance voltage dividers are preferred for high AC voltage measurements?	(5)
5		What is loss factor? Explain its significance.	(5)
6		What are the atmospheric correction factors and mention their influence in HV testing?	(5)
7		Give the classification of type tests for testing of circuit breakers.	(5)
8		Why is grounding essential in a H.V laboratory?	(5)
		PART B	
		Answer any two full questions, each carries 10 marks.	
9		Derive the expression for voltage regulation in voltage multiplier circuits?	(10)
10	a)	Describe the principle of operation, application and limitations of a Van de Graf generator.	(6)
	b)	Explain the working of a 3 stage cascade transformer with neat diagram.	(4)
11	a)	What is the principle of resonant transformer? Draw the circuit of a series	(4)

b)	An impulse generator has 12 capacitors of 0.12µf and 200kV rating. The	(6)	
	wave front and wave tail resistances are $1.25\Omega$ and $4~k\Omega$ respectively. If the		
	load capacitance including that of test object is 10,000pF, find the wave front		
	and wave tail times and the peak voltage of impulse produced.		

#### **PART C**

### Answer any twofull questions, each carries 10 marks.

- 12 a) Explain the method of measurement of very high voltages using sphere gaps. (6) Mention its merits and demerits.
  - b) Explain the principle of operation of Electrostatic voltmeter? (4)
- 13 a) Explain the working of impulse current generator with neat diagram (6)
  - b) Describe the construction and application of a multistage Marx's Generator. (4)
- 14 a) With a circuit diagram explain the working of generating voltmeters. (6)
  - b) What are the problems associated with peak voltmeter circuit using passive (4) elements?

### **PART D**

#### Answer any twofull questions, each carries 10 marks.

- 15 a) Explain the procedure for impulse testing of power transformer. (5)
  - b) What are the short circuit tests performed on circuit breakers? Explain each (5) test.
- 16 a) What are the objectives of high voltage testing? (5)
  - b) Explain partial discharge measurement with neat circuit. (5)
- 17 a) Explain the size and dimensions of the equipments in high voltage (5) laboratories.
  - b) What are the extra precautions that are to be taken while grounding an impulse current generator?

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