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PRESIDENCY UNIVERSITY

BENGALURU

Make Up Examinations – December 2025

Date: 26 – 12- 2025

Time: 1.00pm to 04.00pm

School: SOE	Program: B.Tech. (EEE)		
Course Code: EEE3006	Course Name: High Voltage Engineering		
Semester: MK	Max Marks: 100	Weightage: 50%	

CO - Levels	C01	C02	C03	C04	C05
Marks	24	24	26	26	-

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

10Q x 2M=20M

1	Define Paschen's curve? Mention the parameters which affect breakdown voltage.	2 Marks	L1	C01
2	What are the properties of dielectric or insulating material?	2 Marks	L1	C01
3	Why multistage arrangement is used in high voltage generator?	2 Marks	L1	C02
4	What are the major applications of Van de Graaff generator?	2 Marks	L1	C02
5	What are the factors influencing spark over voltage in sphere gap.	2 Marks	L1	C03
6	List out the different methods of measuring high voltages.	2 Marks	L1	C03
7	List out reasons behind the errors in high voltage measurements.	2 Marks	L1	C03
8	List out the testing methods for high voltage electrical apparatus?	2 Marks	L1	C04
9	How do you control over voltages due to switching phenomenon?	2 Marks	L1	C04
10	What are the causes for over voltages in the system?	2 Marks	L1	C04

Part B

Answer the Questions.

Total Marks 80M

11.	a	Explain the Paschen's law with appropriate notations and plot the Paschen's curve by mentioning the breakdown voltage, pressure and distance.	10Marks	L2	C01
	b	Show the current is $I = I_0 e^{\alpha d}$ considering Townsend's first ionization coefficient in the dielectric gap.	10Marks	L2	C01
Or					
12.	a	An experiment is conducted in a certain gas, it was found that the steady state current is 5.5×10^{-8} A at 9kV at a distance of 0.35 cm between the plane electrodes. Keeping the field E constant and reducing the distance to 0.1 cm results in a current of 5.5×10^{-9} A. Solve Townsend's first ionization coefficient α .	10Marks	L2	C01
	b	With a suitable circuit diagram, demonstrate the photo-ionization process in a dielectric medium.	10Marks	L2	C01
Or					
13.	a	With a neat circuit diagram and waveforms, explain the arrangement to obtain the double voltage.	10Marks	L2	C02
	b	With suitable experimental setup, generate the half wave high DC voltage with input AC voltage and draw the waveforms of without and with filter arrangements.	10Marks	L2	C02
Or					
14.	a	With neat schematic diagram, explain the cascade transformer for high AC voltage generation.	10Marks	L2	C02
	b	Explain the Van de Graaff generator setup to generate high voltage and mention its applications.	10Marks	L2	C02
Or					
15.	a	Draw and explain a simplified equivalent circuit of a resistance potential divider and discuss its step response.	10Marks	L2	C03
	b	With neat diagram explain the Vertical sphere gap arrangement to measure the high voltages.	10Marks	L2	C03
Or					
16.	a	Describe the series resistance method of measuring high voltages.	10Marks	L2	C03
	b	Explain the construction and working of electrostatic voltmeter.	10Marks	L2	C03
Or					
17.	a	Utilize the principles of insulation coordination on high voltage and extra high voltage power systems for improve the protection of high voltage systems.	10Marks	L3	C04

	b	Select suitable procedure employed to test transformer condition in detail.	10Marks	L3	CO4
Or					
18.	a	Select the suitable protection scheme for apparatus using surge arrester in high voltage systems with neat diagram.	10Marks	L3	CO4
	b	Select suitable procedure employed to test bushings condition in detail.	10Marks	L3	CO4