Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: High Voltage Engineering **Semester: VI**
Program: B.Tech Electrical Engineering **Time 03 hrs.**
Course Code: PSEG 309 **Max. Marks: 100**
Instructions:

S. No.		Marks	CO
	SECTION A		
Q 1	Explain breakdown mechanism in Vacuum as described in Clump Mechanism.	**4**	**CO1**
Q.2	With neat diagram explain the working of electrostatic Voltmeter	**4**	**CO3**
Q.3	Explain the construction and working of Tesla coil for high frequency AC generation	**4**	**CO3**
Q.4	Explain the Dielectric loss and its effect on the performance on insulating material	**4**	**CO2**
Q.5	Explain the procedure for preparation of Specimen for Non Destructive HV testing.	**4**	**CO4**
	SECTION B		
Q.6	Describe how the breakdown phenomena in Gas, Liquid and solid insulating material is different from each other.	**8**	**CO2**
Q.7	With neat diagram explain the theory of charge formation in cloud.	**8**	**CO4**
Q.8	With neat diagram explain the procedure for measurement of Dielectric Constant and Loss Factor OR Explain the construction and working of Schering Bridge.	**8**	**CO4**
Q.9	Explain the terms: Creepage Distance, Flashover Voltage, Disruptive Discharge Voltage, Withstand Voltage	**8**	**CO4**
Q.10	Explain the construction and working of Impulse Current Generator. OR Explain the construction and working of (variable capacitance) Electrostatic Generator	**8**	**CO3**
	SECTION-C		
Q.11	a) With neat diagram explain the construction and working of Sphere Gaps and factors affecting the breakdown voltage b) Explain the various tests (any three) conducted on string insulators OR a) Describe the variable capacitance field meter for DC Field measurement b) Explain the various tests conducted (any three) on Power Cable	**10** **10**	**CO5** **CO5**
Q.12	a) Explain the construction and working of Marx generator for Impulse voltage generation. b) With neat diagram explain the Impulse wave and importance of its wave shape,	**12**	**CO3**

	rise time and fall time. Also, describe how 'time lag property' of gaseous insulating material affects the performance in association with Lightning/Impulse wave.	**08**	**CO3**

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SECTION A

S. No.		**Marks**	**CO**
Q 1	Explain Corona discharge. Explain positive Corona & Negative Corona	**4**	**CO1**
Q.2	Explain the construction and working principle of Resonance circuit for AC High Voltage Generation.	**4**	**CO3**
Q.3	Explain the graphical representation of Lightning Wave & also relate why wave shape control is very critical in impulse generators.	**4**	**CO3**
Q.4	Explain the Stressed Oil Volume theory	**4**	**CO1**
Q.5	Explain the various types of 'Gaps' used for protection against high voltage	**4**	**CO4**
	SECTION B		
Q.6	With neat graphical representation explain the Streamer Theory of Ionization	**8**	**CO1**
Q.7	Explain the various factors affecting the performance of Solid Insulators like paper.	**8**	**CO2**
Q.8	With neat diagram explain the procedure for Partial Discharge Measurement OR Explain the Balanced Detection Method for Discharge Detection	**8**	**CO4**
Q.9	Explain the procedure for Synthetic Testing of CB	**8**	**CO4**
Q.10	With neat circuit diagram explain the working of Voltage doubler Circuit. OR Explain the construction and working of Cockroft Walton Generator	**8**	**CO3** **CO3**
	SECTION-C		
Q.11	a) Explain the need and importance of Electric Field measurement. Explain the same with reference to Foot Potential, Step Potential & Touch Potential b) Explain the various testes carried out (any three) HV bushings OR a) Explain the Vibrating plate type variable capacitance Field Meter b) Explain the procedure for preparation of Power Cable Sample for HV Testing.	**10** **10**	**CO3** **CO4**
Q.12	a) Explain the loading effect and importance of isolation in high voltage / current measurement. b) Explain Partial Discharge measurement & how it affects the performance of insulating material. c) Justify 'The temperature is one of the sensitive parameter affecting the performance of insulating material'.	**5** **5** **5**	**CO3** **CO4** **CO2**

	d) Explain the various constrains we consider while choosing the level of voltage for power transmission.	**5**	**CO2**