,					
Reg. No.:					

## **Question Paper Code: 59312**

## B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

## Elective

Electrical and Electronics Engineering

		01UEE912 - HV	DC TRANSMISSIO	N				
		(Regu	lation 2013)					
	Duration: 1.15 hrs			Maximum: 30 Marks				
		PART A -	$(6 \times 1 = 6 \text{ Marks})$					
		(Answer any six o	f the following quest	tions)				
1. Which of the following is a polar dielectric?								
	(a) Teflon	(b) Quartz	(c) Nylon	(d) Polyethylene				
2.	The spark over volta	age						
	(a) Increases w	ith humidity						
(b) Decreases with the partial pressure of water vapour in air								
	(c) Humidity et	ffect decreases with	the size of spheres					
	(d) Humidity is	s minimum for unifor	rm field gaps					
3.	The relationship between the breakdown voltage V and gap d is normally given as							
	(a) $d = kV^2$	(b) $d=kV^3$	(c) $V = kd$	(d) $v = kd^n$				
4.	Breakdown is perma	nnent in						
	(a) Gases	(b) Liquids	(c) Solids	(d) All the three				
5.	A Van de Graaff ger	nerator has a belt spe	eed of 2.5 m/s, charge	density of 10 μc/m <sup>2</sup> and a				
	belt width of 2 m. The maximum charging current is							
	(a) 50 μA	(b) 5 μA	(c) 2 µA	(d) 12.5 μA				

6.	According to the Paschen's Law, the breakdown voltage of a uniform field gap is
	(a) Directly proportional to the gas pressure and inversely proportional to the electrode gap
	(b) Inversely proportional to the gas pressure and directly proportional to the electrode gap
	c) Directly proportional to the both electrode gap and gas pressure
	(d) Inversely proportional to the both electrode gap and gas pressure
7.	Surge diverters are
	(a) non-linear resistors in series with spark gaps which act as fast switches
	(b) arc quenching devices
	(c) shunt reactors to limit the voltage rise due to Ferranti effect
	(d) over-voltages of power frequency harmonics
8.	Impulse testing of transformers is done to determine the ability of

- (c) windings to withstand voltage fluctuations
- (d) all of the above
- 9. In wet flashover tests, the conductivity of water used is

(a) bushings to withstand vibrations

- (a)  $10\pm1.5 \mu$  Siemens (b)  $100\pm15 \mu$  Siemens at ambient temperature
- (c)  $45\pm10 \mu$  Siemens at room temperature
- (d)  $< 1.0 \mu$  Siemens at 27° C
- 10. In EHV and UHV system, ratio of BIL to SIL will be usually
  - (a) Less than unity (b) More than 1.5 (c) 1.5 to 2.0 (d) 1.2 to 1.5  $PART B (3 \times 8 = 24 \text{ Marks})$

## (Answer any three of the following questions)

- 11. Describe with a neat diagram, the different configurations of asynchronous interconnection in HVDC system. (8)
- 12. Describe with a neat diagram, the operation of 6 pulse VSC circuit. (8)
- 13. Illustrate the individual phase control method for generating gate pulse of HVDC valves. (8)
- 14. Compare the salient features of SVC and STATCOM based on all operational aspects. (8)

15.	Discuss the concept of flexible per unit system for DC quantities and explain to basic assumptions made in AC to DC converter. (8	