Reg. No.:					

Question Paper Code: 59312

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

Elective

Electrical and Electronics Engineering

		Electrical and El	cettomes Engineerin	5
		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 of	f the following ques	tions)
1.	Which of the follow	ring is a polar dielect	ric?	
	(a) Teflon	(b) Quartz	(c) Nylon	(d) Polyethylene
2.	The spark over volta	age		
	(a) Increases w	ith humidity		
	(b) Decreases v	with the partial pressi	ure of water vapour i	n air
	(c) Humidity et	ffect decreases with	the size of spheres	
	(d) Humidity is	s minimum for unifor	rm field gaps	
3.	The relationship bet	ween the breakdown	voltage V and gap of	l 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	ed of 2.5 m/s, charge	e density of 10 μc/m ² and a
	belt width of 2 m. Tl	he maximum chargir	g 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 gapc) 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
	(a) bushings to withstand vibrations
	(b) insulation to withstand transient voltages
	(c) windings to withstand voltage fluctuations
	(d) all of the above
9.	In wet flashover tests, the conductivity of water used is
	(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 x 8= 24 Marks)
	(Answer any three of the following questions)
11.	Explain the HVDC transmission based on VSC. (8)
12.	Write short note on
	(i) Converter bridge characteristics (8)
13.	Describe the control circuit for the operation of Current source converter with neat
	sketch. (8)
14.	Compare the salient features of SVC and STATCOM based on all operational aspects. (8)
15.	Derive the discrete time converter model for 3 valve conduction (8)