Model Question Paper-1/2 with effect from 2021(CBCS Scheme)

USN

7th Semester B.E. Degree Examination

Subject Title High voltage and power system protection

TIME: 03 Hours **Max. Marks: 100**

Note :Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module -1	*Bloom's Taxonomy Level	COs	Marks
Q.01	a	Define ionization. With a neat diagram explain ionization by collision and photo ionization.	L2	CO1-PO1	07
	b	What is secondary ionization? Derive Townsend's current growth equation due to primary ionization.	L2	CO1-PO1	06
	c	With the help of neat diagram, discuss the streamer's theory of breakdown.	L2	CO1-PO1	07
		OR			
Q.02	a	With the neat diagram describe the closed cycle liquid purification of commercial liquid.	L2	CO1-PO1	07
	b	Define intrinsic breakdown. Explain thermal breakdown in solid dielectrics.	L2	CO1-PO1	06
	c	Calculate breakdown voltage of spark gap in a gas at Pr = 760 torr at 25deg celcius if A = 15/cm, B =360/cm,d=1mm and y = $1.5*10^{-4}$.Also determine minimum spark over voltage if y=10^{-4} with all other parameter remaining same.	L3	CO1-PO1-PO2	07
		Module-2			
Q. 03	a	Describe with neat sketch, Explain the working of a van de graff generator.	L2	CO2-PO1	07
	b	A 12-stage impulse generator has 0.126pf condenser. The wave, front and wave tail resistance connected are 800ohms and 5000ohms respectively. If the load condenser is 1000pf, find the front and tail times of impulse wave.	L3	CO2-PO1-PO2	06
	c	Explain the principle and construction of electrostatic voltmeter.	L2	CO2-PO1	07
		OR			
Q.04	a	Explain the impulse potential divider with an oscilloscope connected for measuring impulse voltage, mention factors to minimize error.	L2	CO2-PO1	07
	b	Discuss the method of measuring dielectric losses at power frequency using high voltage Schering bridge.	L2	CO2-PO1	06
	c	Discuss the method of discharge detection using straight detect.	L2	CO2-PO1	07
		Module-3			
Q. 05	a	Define protection zone. With the neat diagram explain various zones of protection.	L2	CO3-PO1	07
	b	Discuss the essential qualities of protection.	L2	CO3-PO1	06
	c	Explain balanced beam attracted armature electro mechanical relay.	L2	CO3-PO1	07
		OR			
Q. 06	a	Explain static relay. Also mention merits and demerits.	L2	CO3-PO1	07
	b	Discuss the protection of ring mains using overcurrent schemes.	L2	CO3-PO1	06
	c	Explain with the neat diagram, static instantaneous overcurrent relay.	L2	CO3-PO1	07

Module-4					
Q. 07	a	Explain operating principle and characteristics of impedance relay.	L2	CO4-PO1	07
	b	Define mho relay, explain electromechanical mho relay.	L2	CO4-PO1	06
	c	Explain the circulating current and balanced voltage scheme for wire pilot protection.	L2	CO4-PO1	07
OR					
Q. 08	a	Explain simple differential protection during external and internal fault condition.	L2	CO4-PO1	07
	b	Explain percentage differential protection for stator protection of generator.	L2	CO4-PO1	06
	c	Discuss frame leakage protection of bus zone protection.	L2	CO4-PO1	07
Module-5					
Q. 09	a	Explain fault clearing time and arc voltage of circuit breakers.	L2	CO5-PO1	07
	b	Discuss interruption of capacitive current.	L2	CO5-PO1	06
	c	Compare air blast and airbrake circuit breakers.	L2	CO5-PO1	07
OR					
Q. 10	a	Describe two methods of arc interruption and also explain restriking voltage and recovery voltage.	L2	CO5-PO1	07
	b	Derive an expression for restriking voltage and RRRV.	L3	CO5-PO1	06
	c	Explain klydonograph and magnetic link equipment.	L2	CO5-PO1	07

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.