A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 99302

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Elective

Electrical and Electronics Engineering

19UEE902 – High Voltage Engineering

(Regulations 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Corona effect can be identified by CO1- U

(a) bushy sparks (b) faint violet glow (c) red light (d) arcing between conductors and earth

2. The ideal lightning arrester is the one which CO1- U

(a) Stops the flow of electric current above rated voltage

(b) Conducts electric current above rated voltage

(c) Non polar

(d) None of the above

3. _____transmission line has reflection coefficient as one CO2-U

(a) Open circuit (b) short circuit (c) long (d) None of the above

4. Minimum sparking potential of air is about CO2-U

(a) 100V (b) 4.4KV (c) 40V (d) 325 V

5. Electrical conduction in gases was first studied in 1905 CO3-U

(a) lobe (b) Maxwell (c) Townsend (d) hertz

6. Cockcroft Walton circuits is used for CO3- U

(a) Dc voltage generation (b) Ac voltage generation

(c) both (a) and (b) (d) None of the above

7. To measure a high voltage of peak value about 150kv the suitable sphere gap would be CO4- U

(a) 5cm (b) 10cm (c) 15or 25cm (d) 50cm

8. What do you mean by tesla coil? CO4- U

(a) a radio frequency oscillator (b) cascaded transformer

(c) coreless transformer (d) none of the above

9. The voltage control circuit cannot use resistance potential dividers because CO5- U

(a) They involve a large power loss (b) They cause distortion of waveform

(c) They do not give smooth variation of voltage (d) They have non linear characteristics

10. Cascaded transformer is used for CO5- R

(a) DC voltage generation (b) AC voltage generation

(c) both a and b (d) none of the above

PART – B (5 x 2= 10 Marks)

11. What are switching over voltages? CO1- U

12. What are commercial liquid dielectrics? How are they different from pure liquid dielectrics? CO2- U

13. what are the advantage of series resonance circuit? CO3 -U

14. Give the advantages of electrostatic voltmeter. CO4 -U

15. What are the different test conducted on insulators? CO5 -U

PART – C (5 x 16= 80Marks)

16. (a) Explain with suitable figures the principle and functioning of expulsion gaps and protector tubes. CO1- U (16)

Or

(b) (i) What are the mechanisms by which lightning strokes develop and induce over voltages on over head power lines? CO1- U (10)

(ii) Write short notes on ground rods as protective devices CO1- U (6)

17. (a) Explain in detail the streamer theory of breakdown in gases and also explain the formation of secondary avalanche with neat diagram CO2- U (16)

Or

(b) (i) Explain the various theories that explain breakdown in commercial liquid dielectrics. CO2- U (10)

(ii) Discuss about the various properties of composite dielectrics. CO2- U (6)

18.	(a)	Identify the generator which having moving belt and brushes that transfer charge continuously to a large spherical conducting shell, which produces several million volts that is used for accelerating charged particles.	CO3- Ana	(16)
		Or		
	(b)	Explain with neat diagram MARX circuit and its operations	CO3- U	(16)
19.	(a)	Explain briefly various types of peak reading voltmeters?	CO4- U	(16)
		Or		
	(b)	What is CVT? Explain how CVT can be used for high voltage AC Measurements	CO4- U	(16)
20.	(a)	Describe various tests carried out on the insulators.	CO5- U	(16)
		Or		
	(b)	What is meant by insulation coordination? How are the protective devices chosen for optimal insulation level in a power system?	CO5- U	(16)