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Question Paper Code: 46303

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

Sixth Semester

Electrical and Electronics Engineering

14UEE603 – HIGH VOLTAGE ENGINEERING

(Regulation 2014)

Duration: 1:15hrs

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

- Corona effect can be identified by
 - bushy sparks
 - faint violet glow
 - red light
 - arcing between conductors and earth
- The equivalent circuit of a surge arrester may be represented as
 - Capacitor
 - An inductor
 - Non-linear resistor
 - Resistor
- Which of the following liquids has highest breakdown strength?
 - Mineral oils
 - Silicone oils
 - Chlorinated hydrocarbon oils
 - Polyolefins or esters
- Breakdown is permanent in
 - Gases
 - Liquids
 - Solids
 - All the three
- A Van de Graaff generator has a belt speed of 2.5 m/s, charge density of $10 \mu\text{C}/\text{m}^2$ and a belt width of 2 m. The maximum charging current is
 - 50 μA
 - 5 μA
 - 2 μA
 - 12.5 μA
- A trigetron gap is used with
 - Cascade transformer units
 - Impulse current generator
 - Impulse voltage generator
 - DC voltage double units
- Sphere gaps are used to measure
 - DC voltages
 - AC peak voltages
 - DC, AC peak & impulse voltages
 - only DC & AC peak voltages

8. The type of measuring device preferred for measurement of impulse currents of short duration is
- (a) Park's tubular shunt (b) current transformer
(c) Hall generator (d) Faraday ammeter
9. In wet flashover tests, the conductivity of water used is
- (a) $10 \pm 1.5 \mu$ Siemens (b) $100 \pm 15 \mu$ Siemens at ambient temperature
(c) $45 \pm 10 \mu$ Siemens at room temperature (d) $< 1.0 \mu$ Siemens at 27°C
10. The maximum voltage gradient at the ground level due to a charged cloud before lightning strikes, can be as high as
- (a) 1 V/cm (b) 30V/cm (c) 30V/cm (d) 300V/cm

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. State the characteristics of switching surges. (8)
12. Define Townsend's first and second ionization co-efficients. How is the condition for breakdown obtained in a Townsend discharge? (8)
13. Describe with neat sketch, the working of a Van de Graff generator. State its advantages and disadvantages. (8)
14. Explain how sphere gap can be used to measure the peak value of voltages. What are the parameters and factors that influence such voltage measurement? (8)
15. What are the different power frequency tests done on insulators? Mention the procedure for testing. (8)