Reg. No. : | | | | | | | | | | |

Question Paper Code: 36303

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

Sixth Semester

Electrical and Electronics Engineering

01UEE603 - HIGH VOLTAGE ENGINEERING

(Regulation 2013)

Duration: 1:15hrs Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. Which of the following is a polar dielectric?

   (a) Teflon (b) Quartz (c) Nylon (d) Polyethylene

2. The spark over voltage

   (a) Increases with humidity

   (b) Decreases with the partial pressure of water vapour in air

   (c) Humidity effect decreases with the size of spheres

   (d) Humidity is minimum for uniform 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 permanent in

   (a) Gases (b) Liquids (c) Solids (d) All the three

5. A Van de Graaff generator has a belt speed of 2.5 m/s, charge density of 10 $\mu c/m^2$ and a belt width of 2 m. The maximum charging current is

   (a) 50 μA (b) 5 μA (c) 2 μA (d) 12.5 Ma

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

   (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±1.5 μ Siemens (b) 100 ±15 μ Siemens at ambient temperature
   (c) 45±10 μ Siemens at room temperature (d) < 1.0 μ 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. Enumerate the different theories of charge formation in thunder clouds. (8)

12. Explain in detail the various mechanism of vacuum breakdown. (8)

13. Derive the expression for ripple and regulation in cascaded voltage multiplier circuits. (8)

14. With diagram explain how to measure DC high voltage using series resistance micro ammeter and resistance potential divider? (8)

15. Describe various type of test carried over insulator. (8)