Model Question Paper-I with effect from 2018-19

USN ☐☐☐☐☐☐☐☐☐☐   **15EE73**

Seventh Semester B.E.(CBCS) Examination
High Voltage Engineering
(Core subject, E&EE)

Time: 3 Hrs   Max.Marks: 80

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

Module-1

1. (a) What is paschen's low ? How do you account for the minimum voltage for break down under a given "p x d "condition? **(06 Marks)**

   (b) Explain clearly the electromechanical breakdown in solid dielectric . **(05 Marks)**

   (c) Explain the Bubbles theory of breakdown in liquid. **(05 Marks)**

OR

2. (a) Explain the supended particle theory of breakdown in liquid. **(05 Marks)**

   (b) Explain the Townsends current growth equation. **(05 Marks)**

   (c) In an experiment in a certain gas it was found that the steady state current is 5.5 x10-8 A at 8 KV at a distance of 0.4 cm between the plane electrode .keeping the field constant and reducing the distance to 0.1 cm results in a current of 5.5x10-9 A .calculate Townsends primary ionization coefficient α. **(06 Marks)**

Module-2

3. (a) With neat figure explain the construction and working of Marx Generator. **(08 Marks)**

   (b) A 100 KVA ,400v/250kv testing transformer has 8 % leakage reactance 2 % resistance on 100 kva base .a cable has to be tested at 500 kv using the above transformer as a resonant transformer at 50 Hz. If the charging current of the cable at 500 kV is 0.4 A .find the series inductance required .Assume 2% resistance for the inductor to be used and the connecting leads .neglect dielectric loss of the cable .what will be the input voltage to the transformer

   (08 Marks)

OR

4 (a) With a neat diagram explain the three stage cascade transformer connection to produce high Voltage at 50 Hz. **(06 Mark)**

   (b) With a neat sketch explain the working of 4 stage cockroft-walton DC generator. **(06 Mark)**

   (c) A 12 stage impulse generator has 0.126 µf capacitors .the wave front & wave tail resistance are 800Ω & 5k Ω respectively .if the load capacitor is 1000pf find the front & tail times of the impulse wave produced **(04 Mark)**

Module-3

5 (a) Explain the cathode ray oscilloscope with block diagram? **(05 Marks)**

(b) Explain the construction of sphere gap measurement. **(05 Marks)**

(c) Discuss in brief the method of measuring HVAC by chubb & fortescue method **(06 Marks)**

OR

6 . (a) Explain the various factors that affect the spark over voltage of sphere gap. **(08 Marks)**

(b) With the help of neat sketch explain the construction and working principle of generating voltmeter and .bring out advantage and disadvantage. **(08 Marks)**

Module-4

7. (a) Explain the different theories of charge formation in cloud. **(08 Marks)**

(b) Explain the control of overvoltage due to switching and power frequency. **(08 Marks)**

OR

8.(a).Explain the principles of insulation coordination on HV and EHV power system. **(08 Marks)**
(b) Explain the surge arrester with neat diagram. **(08 Marks)**

Module-5

9. (a) Explain the operation of Schering bridge for three terminal measurement . **(08 Marks)**
(b) Explain discharge detection using straight detector for partial discharge measurement. **(08 Marks)**

OR

10. (a) What are the different type of test conducted on circuit breaker and explain **(05 Marks)**
(b) . Write a short note on testing of cables **(05 Marks)**

(C) A 33 KV ,50 Hz high voltage shearing bridge used to test a sample of insulation .the various arm of bridge at balance are :standard capacitor 500 pf; resistive branch is 800 ohm ;branch with parallel combination of resistor and capacitor has values 318 ohm and 0.0.35 µf .determine the value of the capacitance ,its parallel equivalent loss resistance and the power factor of test object . **(06 Marks)**

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