Printed Pages : 1 **Roll No.** | | | | | | | | | | | **NEE021**

B.TECH.

THEORY EXAMINATION (SEM–VI) 2016-17

HIGH VOLTAGE ENGINEERING

Time : 3 Hours ***Max. Marks : 100***

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1. Explain the following: **10 x 2 = 20**

(a) Define ionization process.

(b) What are commercial liquid dielectrics?

(c) What is time lag?

(d) What do you understand by ripple voltage?

(e) Define flash over and 50% flash over voltage.

(f) Discuss the significance of impulse tests.

(g) Explain collision cross section.

(h) Define impulse generator.

(i) Explain the mean free path.

(j) What will be the break down voltage of spark gap in a gas at

SECTION – B

2. Attempt any five of the following questions: **5 x 10 = 50**

(a) Explain the breakdown in composite dielectrics.

(b) Discuss Townsend's first and second ionization coefficient in detail.

(c) Explain in detail Marx circuit arrangement for multistage impulse generator.

(d) Discuss Van de Graff generator with diagram and working.

(e) Explain with neat diagram how rod gaps can be used for Measurement of high voltages. Compare its performance with a sphere gap in detail.

(f) Discuss in detail about electrostatic voltmeter. What are its advantages and limitations for high voltage measurement.

(g) Explain with neat diagram how wide band circuit can be use for measuring partial discharge. State and explain Paschen's law.

(h) Explain the voltage multiplier circuits. Also explain the cascade connection of transformer for producing very high AC voltages.

SECTION – C

Attempt any two of the following questions: **2 x 15 = 30**

3. A Cock Croft-Walton type voltage multiplier has eight stages with capacitances all equal to .05μF the supply transformer secondary voltage is 125kw at a frequency of 150 Hz. If the load current to be supplied is 5μA. Find (a) the % ripple (b) the regulation (c) the optimum no. of stage for minimum regulation or voltage drop. What is the principal of operation of a resonant T/F? Write its advantage and disadvantage. How it is advantageous over the cascade connected transformer?

4. Discuss various tests earned out for a bushing. Mention the different electrical tests done on isolators and circuit breakers

5. Discuss method of measuring high impulse currents. Discuss in detail about Sphere Gap measurements. What are its advantages and limitations for high voltage measurement?