

III B. TECH I SEMESTER REGULAR EXAMINATIONS, FEB - 2022
HIGH VOLTAGE ENGINEERING
(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 60

Note: Answer **ONE** question from each unit (**5 × 12 = 60 Marks**)

~~~~~

UNIT-I

1. a) Discuss the basic philosophy associated with Finite Difference Method for evaluation of electric field distribution. [6M]
- b) What are field intensity coefficients when referred to charge simulation method. [6M]

(OR)

2. a) Obtain expressions for potential coefficients p for a (i) point charge (ii) line charge (iii) ring charge distribution. [6M]
- b) What is a global stiffness matrix when referred to Finite Element Method used for evaluation of electric field? [6M]

UNIT-II

3. a) Define Townsend's primary and secondary ionization co-efficient and explain breakdown criteria. [6M]
- b) Derive the Townsend's current growth equation. [6M]

(OR)

4. a) Discuss the breakdown phenomenon occurs in solid di-electrics. [6M]
- b) Discuss about the properties of solid dielectrics. [6M]

UNIT-III

5. a) Explain full wave and half wave rectifier circuits to generate high DC voltage. [6M]
- b) Draw and explain COCKROFT WALTON circuit for the generation of high DC voltage. [6M]

(OR)

6. a) Explain voltage doubler circuits to generate high DC voltage. [6M]
- b) What is a trigatron gap? Explain its functions and operation. [6M]

UNIT-IV

7. a) Explain in detail various techniques for the measurement of high DC voltages. [6M]  
b) Give the schematic arrangement of an impulse potential divider with an oscilloscope connected for measuring impulse voltages. [6M]

(OR)

8. a) Discuss various methods of measuring high impulse currents. [6M]  
b) Describe the construction of uniform field spark gap and discuss its advantages and disadvantages for high voltage measurements. [6M]

UNIT-V

9. a) Explain about the tests performed on transformer. [6M]  
b) Explain the tests conducted on high voltage cables. [6M]

(OR)

10. a) Explain the impulse testing procedure for insulators. [6M]  
b) Discuss the different high voltage tests conducted on bushings. [6M]

\* \* \* \* \*