

No. of Printed Pages : 03

Roll No.

H25

B. Tech. EXAMINATION, 2020

(Eighth Semester)

(B Scheme) (Re-appear Only)

EE432B

EHV AC/DC

Time : 2½ Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Four* questions in all. All questions carry equal marks.

1. State Paschen's law. Derive an expression for the Paschen's minimum breakdown voltage (V_b min.). Explain the practical applications of Paschen's law in design of high voltage apparatus.

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2. Explain Townsend's first and second ionization coefficients. How is the condition for breakdown in a Townsend discharge ?
3. Explain the following :
 - (i) Stressed oil volume theory
 - (ii) Cavitation and bubble theory Suspended particle mechanism.
4. (a) Explain different breakdown mechanisms in solid dielectrics.
 (b) Determine the electromechanical breakdown voltage of a PMMC sheet, 4 mm thick, relative permittivity 4 and Young's modulus 100 kg/m^2 when subjected to an impulse voltage. Derive necessary relation.
5. Why is a Cockcroft-Walton circuit preferred for voltage multiplier circuits ? Explain its working with a schematic diagram.
6. Give the Marx circuit arrangement for multistage impulse generators. How is the basic arrangement modified to accommodate the wave time control resistances ?

7. Explain the principle and construction of an electrostatic voltmeter for very high voltages. What are its merits and demerits for high voltage a.c. measurements ?
8. What are the different power frequency tests done on insulators ? Mention the procedure for testing.