No. of Printed Pages : 03 **Roll No. .....**

H28

B. Tech. EXAMINATION, 2020

(Eighth Semester)

(B Scheme) (Re-appear Only)

EE442B

HIGH VOLTAGE ENGINEERING

Time : 2½ *Hour*s] [*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. (a) Explain Townsend's theories of breakdown of gas materials.

(b) Discuss the advantages of HVDC transmission over EHV-AC transmission.

2. (a) Discuss the phenomenon of thermal breakdown in solid dielectrics.

(b) Explain the suspended particle mechanism of breakdown mechanism in commercial liquid dielectrics.

3. Explain with a neat circuit the generation of high DC voltages using an n-stage Cock roft-Walton circuit. Derive an expression for the total ripple content in the output voltage.

4. (a) Explain the working principle of parallel resonant transformer.

(b) Explain the working principle of cascaded transformers for producing very high a.c. voltages.

5. Explain various types of grounding in detail.

6. (a) Give details of different surge diverter.

(b) Write a short note on counter poise wire.

7. (a) Explain lightning phenomenon with suitable diagram.

(b) What is tower footing resistance ? What is its importance in determining the protection level ?

8. (a) Write a short note on lightning stroke mechanism.

(b) Describe the two theories of discharge-separation process during lightning in the sky.