

H28

B. Tech. EXAMINATION, 2020

(Eighth Semester)

(B. Scheme) (Main & Re-appear)

(EE, EEE)

EE442B

HIGH VOLTAGE ENGINEERING

Time : 3 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 *Five* questions in all, selecting at least *one* question from each Unit. Each question carries equal marks.

Unit I

1. (a) Describe in detail the necessity of Extra High Voltage Transmission. 8
(b) Define Paschen's Law. Derive the expression for minimum spark-over voltage. 7
2. (a) Give mathematical treatment of insulation characteristics of long air gap. 8
(b) What are treeing and tracking ? Explain clearly the two processes in solid dielectrics. 7

Unit II

3. Describe with a neat sketch the working of a Vande Graff generator. What are the factors that limit the maximum voltage obtained ? 15

4. Explain the operation of Electrostatic voltmeter with neat sketch and give its advantages and limitations. **15**

Unit III

5. Explain in detail about the protection of transmission lines against over-voltages. **15**
6. Explain in detail about the insulation coordination. **15**

Unit IV

7. Derive mathematical model for lightning discharges. What are the sources of switching surges. **15**
8. (a) Compare the characteristics of gap type and gap less type lightning arrester. **8**
(b) Describe the two theories of discharge-separation process during lightning in the sky. **7**