

Code No: 155BR

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, January/February - 2023

HIGH VOLTAGE ENGINEERING**(Electrical and Electronics Engineering)**

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A**(25 Marks)**

- 1.a) What is ionization process? [2]
- b) Give brief about composite dielectrics. [3]
- c) What are the various methods to generate high impulse currents? [2]
- d) Explain the working principle of Vande-Graff generator. [3]
- e) What are the methods to generate peak voltage? [2]
- f) Define dielectric constant. [3]
- g) How do switching over voltages are generated? [2]
- h) Define surge. What are lightening surges? [3]
- i) List out various high voltage equipment. [2]
- j) List IS standards for high voltage testing. [3]

PART – B**(50 Marks)**

2. Explain the process of breakdown in pure and commercial liquids with suitable diagrams. [10]

OR

3. Obtain the Townsend's current growth equation. Explain Townsend's criteria for air breakdown. [10]

4. Design voltage doubler circuits to generate high DC voltage. [10]

OR

5. Draw and explain cascade transformer to generate high AC voltage. [10]

6. Design and discuss about cathode ray oscillographs for impulse voltage measurement. [10]

OR

7. Explain in detail various techniques for the measurement of high DC voltages. [10]

8. Explain different methods employed for lightning protection. [10]

OR

9. With a neat sketch, explain the working principle of an expulsion type lightning arrester. [10]

10. Discuss the different high voltage tests conducted on bushings. [10]

OR

11. With neat diagrams, explain various methods of testing circuit breaker. [10]