

Code No: 155BR**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, February - 2022****HIGH VOLTAGE ENGINEERING
(Electrical and Electronics Engineering)****Time: 3 hours****Max. Marks: 75****Answer any five questions
All questions carry equal marks**

- 1.a) Explain the difference between photo-ionization and photo-electric emission.
b) Describe the Streamer theory of breakdown in air at atmospheric pressure. [7+8]
- 2.a) What are commercial liquid dielectrics and how are they different from pure liquid dielectrics.
b) Explain thermal breakdown in solid dielectrics. How this mechanism is more significant than the other mechanisms? [7+8]
- 3.a) What is mean by ripple voltage? Show that the ripple voltage in a rectifier circuit depends upon the load current and the circuit parameters.
b) What are the various components of a multistage impulse generator? Discuss them. [7+8]
4. Explain clearly the basic principle of operation of an electrostatic generator. Describe with neat diagram the principle of operation, application and limitations of Van de Graf generator. [15]
- 5.a) Explain clearly the procedure for measurement of impulse and AC high voltages using sphere gap.
b) An absolute electrostatic voltmeter has a movable circular plate 8 cms in diameter. If the distance between the plates during a measurement is 4 mm, find the potential difference when the force of attraction is 0.2 gm wt. [9+6]
- 6.a) What are the requirements of an oscillograph for impulse and high frequency measurements in high voltage test circuits? Discuss in brief.
b) Discuss the other techniques for impulse current measurements. [8+7]
- 7.a) Explain the different theories of charge formation in clouds.
b) What are the causes for switching and power frequency over voltage's? How they are controlled in power systems? [7+8]
- 8.a) What is the significance of impulse tests. Briefly explain the impulse testing of insulators.
b) What are the significances of power factor tests and partial discharge tests on bushings? How are they conducted in the laboratory? [7+8]