

Roll No

EX-7004 (1) (CBGS)**B.E. VII Semester**

Examination, November 2018

Choice Based Grading System (CBGS)**High Voltage Engineering**

(Elective-III)

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any two parts from each questions.

ii) All questions carry equal marks.

1. a) What are the important factors which are considered in designing any high voltage system? 7
- b) What are different theories which describe the Breakdown in liquid dielectric? Explain any one. 7
- c) What are the mechanism of breakdown in solid dielectric due to internal discharge? Compare them with treeing and tracking phenomenon. <https://www.rgpvonline.com> 7
- a) A steady current of $600\mu\text{A}$. flows through the plane electrode separated by a distance of 0.5cm, when a voltage of 10kv is applied. Determine Townsend's first ionization coefficient it a current of $60\mu\text{A}$. flows when the distance of separation is reduced to 0.1cm and field is kept constant. 7
- b) Describe the various types of insulations used in a power transformer. Explain effect of oxidation on transformer oil. <https://www.rgpvonline.com> 7
- c) Explain Breakdown in solid dielectric. 7

3. a) Explain operation of nonlinear element surge diverter with its characteristics. 7
- b) What are reasons for origin of switching surges? Describe characteristics of switching surges with their waveshapes. 7
- c) Explain Cockroff-Walton type high voltage DC set. 7
4. a) Explain working principle of Multistage Marx Impulse Generator. <https://www.rgpvonline.com> 7
- b) A ten stage Cockroff-Walton circuit hall capacitors of $0.06\mu\text{f}$. The secondary voltage of transformer is 100kV at a frequency of 150Hz. If load current of 5mA, determine voltage regulation and optimum number of stages for maximum output voltage. 7
- c) What are standard sphere gap measurements of HVAC, HVDC and impulse voltages, How? 7
5. a) Describe tests on circuit breakers and transformers. 7
- b) Explain various tests conducted on Bushing and insulators. 7
- c) How fault can be detected by impulse testing of transformer? 7
