

40+26

B-E. Electrical VII CBSEGS  
Elective-I HVE

21.12.16

QP Code :811001

(3 Hours)

[ Total Marks : 80

- N. B. :** (1) Question No.1 is **compulsory**.  
(2) Attempt any **three** questions out of remaining questions.  
(3) **Figures** to the **right** indicate **full** marks.  
(4) **Assume** suitable **data** if **necessary**.

1. Attempt any **four** :- 20
- (a) With a neat sketch explain trigatron spark gap used in impulse generators.
  - (b) Explain the phenomenon of 'treeing' in solid insulating materials under electrical Stress.
  - (c) Explain clearly suspended particle mechanism of liquid breakdown.
  - (d) What is Partial discharge ? Differentiate between internal and external partial discharges.
  - (e) State and explain Paschen's law.
2. (a) Explain with neat diagrams, why are capacitance voltage dividers preferred for high ac voltage measurements? 10
- (b) Explain the streamer theory of breakdown in air at atmospheric pressure. 10
3. (a) Describe the principle of operation of a resonant transformer? How it is advantageous over the cascade connected transformers? 10
- (b) With a neat sketch, explain the working of a Van-De-Graff generator. What are the factors that limit the maximum output voltage obtained? 10
4. (a) Explain how a sphere gap can be used to measure the peak value of voltages. What are the parameters and factors that influence such voltage measurement? 10
- (b) Describe in brief various tests carried out on 'Bushings'. 10
5. (a) Draw and explain a three stage Marx Impulse generator circuit and discuss its applications. 10
- (b) Derive an expression for ripple voltage of a Multistage Cock Croft-Walton circuit. 10
6. (a) Explain Thermal breakdown in solid dielectrics. How this mechanism is more significant than the other mechanisms. 10
- (b) What are the various factors to be considered while designing a High Voltage Laboratory ? 10