

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**B.Tech. Summer 2018 - 19 Examination**

**Semester: 6**  
**Subject Code: 03106352**  
**Subject Name: High Voltage Engineering**

**Date: 02/05/2019**  
**Time: 10:30 am to 01:00 pm**  
**Total Marks: 60**

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1 Objective Type Questions - (All are compulsory) (Each of one mark) (15)**

1. SF<sub>6</sub> is a  
(a) neutral gas (b) electronegative gas (c) non-attaching gas (d) ionizes easily to form ions
2. Paper insulation is mainly used in \_\_\_\_\_.
3. In a voltage doubler circuit peak to peak ripple is  
(a) =  $3I/fC$  (b) =  $2I/fC$  (c) =  $3I/fC$  (d) =  $I/fC$
4. Breakdown is permanently in \_\_\_\_\_.
5. In a testing with a resonant transformer the output voltage is  
(a) Rectangular Wave (b) Triangular Wave (c) Trapezoidal Wave (d) Pure sine Wave
6. According to Townsend current growth process the current I in a uniform electric field gap is  
\_\_\_\_\_
7. Photo-ionization of a gas is possible by \_\_\_\_\_.  
(a) Infrared light (b) Visible light (c) Ultra violet light (d) All of the above
8. Sphere gap is used for measurement of  
(a) a.c. Voltage only (b) d.c. Voltage only (c) impulse voltage (d) (a) and (b)
9. Impulse voltage is caused by lightning and \_\_\_\_\_.
10. The Schering Bridge is used to measure the capacitance of dielectric. ( True / False )
11. Generating voltmeters are usually used for measurement of d.c. voltages. ( True / False )
12. A standard lightning impulse voltage wave as per Indian standard is \_\_\_\_\_.
13. When an excited atom gets de-excited, it gives out \_\_\_\_\_.
14. The majority of lightning strokes is of \_\_\_\_\_ polarity.
15. Wet flashover is higher than dry flashover voltage of an insulator. ( True / False )

**Q.2 Answer the following questions. (Attempt any three) (15)**

- A) What is Paschen's Law? Explain it.
- B) What is thermal breakdown in solid dielectrics?
- C) Explain working of Cockroft-walton voltage multiplier.
- D) Discuss Surge arrestors as a Protective Devices.

**Q.3 A) Explain cascade transformer for generating high voltage. (07)**

- B) What is meant by insulation co-ordination? How are the Protective devices chosen for optimal insulation level in a Power system? (08)

**OR**

- B) Explain purification of liquid dielectric material with neat sketch. (08)

**Q.4 A) Explain HV Testing on Insulators. (07)**

**OR**

- A) Discuss the different methods of measuring high DC voltages. What are limitations in each method? (07)

- B) Define Townsend's first and second ionization coefficients. (08)