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Total No. of Questions : 09]

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B.Tech. (Sem. - 7<sup>th</sup>/8<sup>th</sup>)

**EXTRA HIGH VOLTAGE ENGINEERING**

**SUBJECT CODE : EE - 416 (Elective - I)**

**Paper ID : [A0432]**

[Note : Please fill subject code and paper ID on OMR]

**Time : 03 Hours**

**Maximum Marks : 60**

**Instruction to Candidates:**

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

**Section - A**

**Q1)**

**(10 × 2 = 20)**

- a) What are the factors on which the power that can be transmitted through an EHV line depends?
- b) How is Bundle spacing and Bundle radius defined?
- c) Calculate the surge impedance loading of a 750 kV line of the surge impedance 300 ohms.
- d) How bipolar link is different from homopolar link?
- e) Define 'Treeing' and 'Tracking' in solid dielectrics.
- f) What are electronegative gases?
- g) Give applications of power capacitors.
- h) What is a Tesla coil?
- i) How is a lossy dielectric represented.
- j) Give significance of impulse tests.

## Section - B

(4 × 5 = 20)

- Q2) Give the advantages and disadvantages HVDC over HVAC transmission.
- Q3) Describe various types of dc links. List the converter station equipments.
- Q4) Explain the mechanism of development of anode and cathode streamers and discuss how these lead to breakdown.
- Q5) What is meant by intrinsic strength of a solid dielectric? How does breakdown occur due to electrons in a solid dielectric?
- Q6) Explain various schemes for cascade connection of transformers for producing very high AC voltages.

## Section - C

(2 × 10 = 20)

- Q7) Explain briefly various theories of breakdown in liquid dielectrics.
- Q8) Discuss the different methods of high current measurements with their relative merits and demerits.
- Q9) Write short notes on the following :
- (a) Marx's surge generator.
  - (b) Testing of cables.

