[Total No. of Questions - 9] [Total No. of Printed Pages - 2]
(2125)

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B. Tech 5th Semester Examination

High Voltage Techniques & HVDC (NS)

EE-313

Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, selecting one question each from section A, B, C & D. Section E (question no. 9) is compulsory.

SECTION - A

1. (a) Explain in detail basic processes of ionization in a gas. (12)

   (b) Explain general characteristics of gaseous insulation. (8)

2. (a) Explain commonly used liquid insulating materials and their properties. (10)

   (b) Explain different mechanisms of breakdown of solids. (10)

SECTION - B

3. (a) Explain the origin and characteristics of switching surges. (10)

   (b) Explain the characteristics of lightning stroke. (10)

4. Explain the construction, working and application of various lightning arrestors. (20)

[P.T.O.]

SECTION - C

5. (a) Draw an impulse waveform and write its definitions and equation. (10)

   (b) Explain determination of front and tail resistance to produce a given wave shape. (10)

6. Explain the measurement of high voltage by

   (a) ammeter in series with high voltage resistor. (10)

   (b) voltage divider. (10)

SECTION - D

7. (a) Explain merits and demerits of HVDC transmission System. (10)

   (b) Explain various types of HVDC systems. (10)

8. Explain in detail comparison of AC and DC transmission. (20)

SECTION - E

9. (a) What is range of DC reactor in HVDC substation?

   (b) Why bipolar HVDC link is more reliable than monoploar link?

   (c) What is Paschen's law?

   (d) Why SF_6 gas is widely used for applications in high voltage?

   (e) What is thermal mechanism of breakdown in liquids?

   (f) What is insulation co-ordination?

   (g) What is front time of an impulse wave?

   (h) What is use of impulse generator?

   (i) What is back - to-back HVDC link?

   (j) What is electrostatic voltmeter? (10×2=20)