

Roll No

EX - 7201

B.E. VII Semester

Examination, December 2015

High Voltage Engineering

Time : Three Hours

Maximum Marks : 70

- Note:** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

1. a) What are the applications of high voltages excluding those in the generation, transmission and distribution of electrical energy?
- b) Describe briefly the reasons for electric stress being considered as the main contributor to the breakdown of insulation.
- c) Name five most important properties of dielectric used in high voltage engineering.
- d) Explain in detail the advantages of transmitting electrical power at high voltages.

OR

Describe the need for generating high voltages in laboratory.

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2. a) State Paschen's law. And its significance in breakdown of dielectrics. rgpvonline.com
- b) What are metal stable atoms? How they are ionizing the gaseous dielectric medium?
- c) Explain the phenomena of thermal breakdown in solid dielectrics.
- d) Explain streamer mechanism of breakdown in gaseous dielectrics.

OR

State various processes which lead to formation of bubbles in liquid dielectrics and explain clearly cavity and electro convection breakdown mechanisms in liquid breakdown.

3. a) What is a cascaded transformer?
- b) What is the need for generating high impulse current?
- c) Why is a Cockcroft-Walton circuit preferred for voltage multiplier circuits?
- d) Explain with a neat circuit diagram, the triggering of impulse generator with a three electrode gap method.

OR

Describe the principle of operation of a resonant transformer. How is it advantageous over the cascade connected transformers? rgpvonline.com

4. a) Compare the measurement of high voltages using potential dividers and standard sphere gaps.

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- b) What are the merits of series resistance micro ammeter method?
- c) What are the factors influencing the measurements of HVAC, HVDC and impulse voltages using sphere gap?
- d) Explain the working principle and operation of generating voltmeter.

OR

Discuss the measurement of fast rising voltages using capacitance voltage dividers.

5. a) Give the Indian standard reference atmospheric condition for high voltage testing.
- b) Name the different types of tests conducted on high voltage apparatus.
- c) What are the equipment and devices needed for conducting impulse test on high voltage equipment?
- d) Discuss the various tests carried out on insulators.

OR

What are the tests conducted on transformer and explain the impulse testing of transformer?
