

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech.

Branch : Electrical Engineering

Semester : VII

Subject Code & Name: BTEEC702 High Voltage Engineering

Max Marks: 60

Date: 18/08/2022

Duration: 3.45 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q. 1 Solve Any Two of the following.

- A) What is secondary ionization? Explain the various causes in detail for secondary ionization. 6
- B) Derive the equation for Townsend's second coefficient of ionization and also state the Townsend's criteria. 6
- C) What is Paschen's Law? Derive an equation to prove that the breakdown voltage is a function of distance between the electrodes. 6

Q.2 Solve Any Two of the following.

- A) Explain the various theories for breakdown in liquids. 6
- B) What is electric stress? Suggest various methods to control electric stress. 6
- C) Describe breakdown in Solid insulating materials. 6

Q. 3 Solve Any One of the following.

- A) State the need for insulation co-ordination. Also explain Basic Insulation Level and its significance. 6
- B) Discuss various theories explaining the cause of natural lightning. 6
- C) What are travelling waves? Explain various causes for generation of travelling waves. 6

Q.4 Solve Any Two of the following.

- A) Draw a neat circuit diagram for a Marx Impulse Generator. Also explain the working of the Impulse Generator. 6
- B) What is a switching surge? Explain its effects and causes in detail. 6
- C) Discuss the need for high voltage generation and explain various sources for obtaining high voltage. 6

Q. 5 Answer the following in brief (ANY 2)

- A) Write a short note on requirements of high voltage laboratories and explain the requirements of small, large and very large laboratories.**
- B) Explain the test procedure for Lightning Impulse test and Double Voltage Double Frequency tests carried out on equipments like transformer. Also state the relevant Indian Standard.**
- C) State the significance of Lightning arrester and also explain its working in detail.**

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