

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE		
Winter Examination – 2022		
Course: B. Tech.	Branch : Electrical Engineering	Semester : VII
Subject Code & Name: High voltage Engineering (BTEEC702)		
Max Marks: 60	Date: 30/01/2023	Duration: 3 Hr.
Instructions to the Students:		
<ol style="list-style-type: none"> 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) Marks

Q. 1 Solve Any Two of the following. 12

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|--|------------|---|
| A) Derive Poisson's Equation. Also Write the Laplace's equation. | Evaluation | 6 |
| B) Explain Estimation and Control of Electric Stress. | Understand | 6 |
| C) Define the terms: (a) Disruptive Discharge Voltage (b) Withstand Voltage
(c) Fifty Percent Flashover Voltage (d) Hundred Percent Flashover
Voltage (e) Creepage Distance (f) B.C. Test Voltages | Remember | 6 |

Q.2 Solve Any Two of the following. 12

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|---|------------|---|
| A) Explain Ionization by Collision and Photo-ionization. | Understand | 6 |
| B) Write a short note on Time lags for Breakdown. | Remember | 6 |
| C) Explain the Streamer theory of breakdown in air at atmospheric pressure. | Understand | 6 |

Q. 3 Solve Any Two of the following. 12

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|---|------------|---|
| A) With neat Sketch explain Liquid purification system with test cell in case of Pure and commercial liquids. | Understand | 6 |
| B) Explain i) Suspended Particle Mechanism
ii) Cavitation and Bubble Mechanism | Understand | 6 |
| C) Prove that $\frac{V}{d_0} = E_a = 0.6 \left[\frac{\gamma}{\epsilon_0 \epsilon_r} \right]^{\frac{1}{2}}$
In case of Electromechanical Breakdown | Evaluation | 6 |

Q.4 Solve Any Two of the following. 12

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|--|------------|---|
| A) Explain with suitable figures the principles and functioning of (a) expulsion gaps and (b) protector tubes. | Understand | 6 |
| B) What is a surge diverter? Explain its function as a shunt protective device. | Remember | 6 |
| C) Explain Power Frequency Tests, Impulse Voltage Tests and Thermal Tests of Bushings. | Understand | 6 |

- Q. 5 Solve Any Two of the following.** **12**
- A) Explain with neat circuit diagram and waveform the generation of High DC Voltages using Half wave and Full Wave rectifier circuit. Understand **6**
- B) Explain with circuit diagram the generation of High AC Voltages using Cascade transformer. Understand **6**
- C) Discuss Measurement of High Direct Current Voltages using high ohmic series resistance with Microammeter and Resistance Potential Divider. Create **6**

***** End *****