**18EE701**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **January, 2022** | **Electrical & Electronics Engineering** | | |
| **Seventh Semester** | **HIGH VOLTAG ENGINEERING** | | |
| **Time:** Three Hours | | **Maximum:** 50 Marks | |
| *Answer Question No.1 compulsorily.* | | | (1X10 = 10 Marks) |
| *Answer ONE question from each unit.* | | | (4X10=40 Marks) |

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| 1. | a) | Define intrinsic breakdown. | CO1 |  |
|  | b) | Define Paschen’s law. | CO1 |  |
|  | c) | Define the front and tail times of an impulse wave . | CO1 |  |
|  | d) | Mention the components of impulse voltage generator. | CO2 |  |
|  | e) | What is loss factor? | CO2 |  |
|  | f) | Define impulse flash over voltage. | CO2 |  |
|  | g) | Define partial discharge. | CO2 |  |
|  | h) | What is the significance of thermal test on bushings? | CO3 |  |
|  | i) | What is time lag in breakdown of dielectrics? | CO3 |  |
|  | j) | State any two advantages of resonant transformer. | CO3 |  |
| **Unit -I** | | | | |
| 2. | a) | Explain the Streamer theory of breakdown in air at atmospheric pressure. | CO1 | 5M |
|  | b) | How does the 'internal discharge" phenomena lead to breakdown in solid dielectrics? | CO1 | 5M |
| **(OR)** | | | | |
| 3. | a) | Explain the Townsend’s first and second ionization processes. | CO1 | 5M |
|  | b) | What are the factors that influence conduction in pure liquid dielectrics and in commercial liquid dielectrics? Explain. | CO1 | 5M |
| **Unit -II** | | | | |
| 4. | a) | What is voltage doubler circuit? Explain its operation and derive the expression for ripple voltage and voltage regulation of voltage doubler circuit. | CO2 | 5M |
|  | b) | Discuss elaborately the principle and operation of Cascaded transformers for generating high AC voltages. | CO2 | 5M |
| **(OR)** | | | | |
| 5. | a) | Draw and explain the multistage impulse generator circuit. | CO2 | 5M |
|  | b) | Describe with neat diagram the principle of operation, application and limitation of  Van de Graf generator. | CO2 | 5M |
| **Unit -III** | | | | |
| 6. | a) | Describe the generating voltmeter method for measuring high DC voltages. | CO3 | 5M |
|  | b) | Explain the measurement of dielectric constant and loss factor. | CO3 | 5M |
| **(OR)** | | | | |
| 7. | a) | Describe various types of resistive shunts used for impulse current measurements. | CO3 | 5M |
|  | b) | Describe the need of high speed oscilloscope for measuring impulse voltages. | CO3 | 5M |
| **Unit -IV** | | | | |
| 8. | a) | Find Explain the following briefly  a) withstand voltage b)flashover voltage c)wet and dry power frequency tests | CO4 | 5M |
|  | b) | Illustrate the method of impulse testing of high voltage transformers. | CO4 | 5M |
| **(OR)** | | | | |
| 9. | a) | Describe how the short circuit test is conducted on circuit breakers | CO4 | 5M |
|  | b) | List out the common test facilities available in high voltage laboratories. | CO4 | 5M |

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