**18EE701**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **January, 2022** | **Electrical & Electronics Engineering** | | |
| **Seventh Semester** | **High Voltage Engineering** | | |
| **Time:** Three Hours | | **Maximum:** 50 Marks | |
| ***Answer question 1 compulsory.*** | | | **(10X1 = 10Marks)** |
| ***Answer one question from each unit.*** | | | **(4X10=40Marks)** |

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|  |  |  | CO | BL | M |
| 1 | a) | Define intrinsic breakdown. | CO1 | L1 | 1M |
|  | b) | Define Paschen’s law. | CO1 | L1 | 1M |
|  | c) | Define the front and tail times of an impulse wave . | CO1 | L1 | 1M |
|  | d) | Mention the components of impulse voltage generator. | CO2 | L1 | 1M |
|  | e) | What is loss factor? | CO2 | L1 | 1M |
|  | f) | Define impulse flash over voltage. | CO2 | L1 | 1M |
|  | g) | Define partial discharge. | CO2 | L1 | 1M |
|  | h) | What is the significance of thermal test on bushings? | CO3 | L1 | 1M |
|  | i) | What is time lag in breakdown of dielectrics? | CO3 | L1 | 1M |
|  | j) | State any two advantages of resonant transformer. | CO3 | L1 | 1M |
| **Unit-I** | | | | | |
| 2 | a) | Explain the Streamer theory of breakdown in air at atmospheric pressure. | CO1 | L2 | 5M |
|  | b) | How does the 'internal discharge" phenomena lead to breakdown in solid dielectrics? | CO1 | L2 | 5M |
|  |  | **(OR)** |  |  |  |
| 3 | a) | Explain the Townsend’s first and second ionization processes. | CO1 | L3 | 5M |
|  | b) | What are the factors that influence conduction in pure liquid dielectrics and in commercial liquid dielectrics? Explain. | CO1 | L2 | 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 | L3 | 5M |
|  | b) | Discuss elaborately the principle and operation of Cascaded transformers for generating high AC voltages. | CO2 | L2 | 5M |
| **(OR)** | | | | | |
| 5 | a) | Draw and explain the multistage impulse generator circuit. | CO2 | L2 | 5M |
|  | b) | Describe with neat diagram the principle of operation, application and limitation of   Van de Graf generator. | CO2 | L2 | 5M |
| **Unit-III** | | | | | |
| 6 | a) | Describe the generating voltmeter method for measuring high DC voltages. | CO3 | L2 | 5M |
|  | b) | Explain the measurement of dielectric constant and loss factor. | CO3 | L3 | 5M |
| **(OR)** | | | | | |
| 7 | a) | Describe various types of resistive shunts used for impulse current measurements. | CO3 | L2 | 5M |
|  | b) | Describe the need of high speed oscilloscope for measuring impulse voltages. | CO3 | L2 | 5M |
| **Unit-IV** | | | | | |
| 8 | a) | Find Explain the following briefly  a) withstand voltage    b)flashover voltage c)wet and dry power frequency tests | CO4 | L2 | 5M |
|  | b) | Illustrate the method of impulse testing of high voltage transformers. | CO4 | L3 | 5M |
| **(OR)** | | | | | |
| 9 | a) | Describe how the short circuit test is conducted on circuit breakers | CO4 | L2 | 5M |
|  | b) | List out the common test facilities available in high voltage laboratories. | CO4 | L3 | 5M |



**\*\*\* Remove the border lines after typing the QP**