**18EE701**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION** | | | |
| **November, 2022** | **Electrical & Electronics Engineering** | | |
| **Seventh Semester** | **High Voltage Engineering** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (1X10 = 10 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X10=40 Marks) |

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| 1. | a) | Define ionization process in breakdown mechanism | CO1,L1 | | |  |
|  | b) | State Paschen’s law. | CO1,L2 | | |  |
|  | c) | State difference between pure and commercial liquids | CO1,L2 | | |  |
|  | d) | What is the working principle of Tesla coil? | CO2,L2 | | |  |
|  | e) | List the various techniques for generation of high DC voltages | CO2,L4 | | |  |
|  | f) | What is the function of series resistance micro ammeter? | CO2,L1 | | |  |
|  | g) | What are the various methods available for measurement of high DC voltages | CO3,L1 | | |  |
|  | h) | What is the necessity of over voltage protection? | CO3,L2 | | |  |
|  | i) | How are the testing of insulators classified | CO4,L1 | | |  |
|  | j) | Define the flashover voltage | CO4,L1 | | |  |
| **Unit - I** | | | | | | |
| 2. | a) | Explain Townsend’s breakdown mechanism in gases | CO1,L2 | | 5M | |
|  | b) | Explain the various mechanisms of breakdown phenomenon in commercial liquids | CO1,L2 | | 5M | |
|  |  | **(OR)** |  | |  | |
| 3. | a) | Explain electromechanical breakdown in solid dielectrics | CO1,L2 | | 5M | |
|  | b) | Explain how treeing and tracking leads to breakdown in solid insulating materials | CO1,L2 | | 5M | |
| **Unit – II** | | | | | | |
| 4. | a) | Explain with neat sketch of voltage multiplier circuit for generation of high DC voltages | CO2,L3 | 5M | | |
|  | b) | Explain the generation high AC Voltages using cascade connection of transformer | CO2,L2 | 5M | | |
|  |  | **(OR)** |  |  | | |
| 5. | a) | Explain the Marx circuit arrangement for generation of Impulse voltages | CO2,L3 | 5M | | |
|  | b) | Explain about tripping and control of impulse generators. | CO2,L2 | 5M | | |
| **Unit – III** | | | | | | |
| 6. | a) | Describe the generating voltmeter used for measuring high dc voltages. | CO3,L2 | 5M | | |
|  | b) | Explain the principle and construction of an electrostatic voltmeter for very high voltages | CO3,L2 | 5M | | |
|  |  | **(OR)** |  |  | | |
| 7. | a) | What are the different types of resistive shunts used for impulse current measurements? | CO3,L1 | 5M | | |
|  | b) | Explain the high voltage Schering bridge for the tan δ and capacitance measurement of insulators or bushings. | CO3,L2 | 5M | | |
| **Unit – IV** | | | | | | |
| 8. | a) | What are the different power frequency tests done on insulators? Mention the procedure for testing. | CO4,L1 | 5M | | |
|  | b) | Explain the significances of power factor tests and partial discharge tests on bushings | CO4,L2 | 5M | | |
|  |  | **(OR)** |  |  | | |
| 9. | a) | Explain the method of impulse testing of high voltage transformers | CO4,L2 | 5M | | |
|  | b) | List the common test facilities available in high-voltage laboratories | CO4,L4 | 5M | | |

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