**14EE803 (A)**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION** | | | |
| **July, 2021** | **Electrical &Electronics Engineering** | | |
| **Eighth Semester** | **High Voltage Engineering** | | |
| **Time:** Three Hours | | **Maximum:** 60 Marks | |
| *Answer ALL Questions from PART-A.* | | | (12X1 = 12 Marks) |
| *Answer* ***ANY FOUR*** *questions from PART-B.* | | | (4X12=48 Marks) |
| Part - A | | | |

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| 1. | Answer all questions | | (12X1=12 Marks) | |
|  | a) | Draw the impulse waveform. | |  |
|  | b) | State the components of multistage impulse generator. | |  |
|  | c) | What is resonant transformer? | |  |
|  | d) | Mention the advantages of generating voltmeter. | |  |
|  | e) | What are the limitations of series resistance micro ammeter method? | |  |
|  | f) | What is the use of high speed oscilloscope? | |  |
|  | g) | Define critical disruptive voltage. | |  |
|  | h) | Write the Meek's formula for power loss due to corona. | |  |
|  | i) | Define flash over voltage. | |  |
|  | j) | Write the Poisson's equation for electrostatics. | |  |
|  | k) | What is the limitation of boundary element method? | |  |
|  | l) | What is the governing equation for the electrical potential V for triangular elements in FEM? | |  |
| Part - B | | | | |
| 2. | a) | Draw and explain the Marx circuit arrangement for multistage impulse generator. | | 6M |
|  | b) | What is Tesla coil?. Explain its operation. | | 6M |
|  | | | | |
| 3. | a) | A 10 stage Cockcroft Walton circuit has all capacitors of 0.04 µF. The secondary voltage of the supply transformer is 150Hz. If the load current is 1.2mA, determine the voltage regulation and optimum number of stages for maximum output voltage. | | 6M |
|  | b) | Discuss the principle and operation of cascaded transformers for generating high AC voltages | | 6M |
|  | | | | |
| 4. | a) | Explain how a sphere gap can be used to measure the peak value of voltages. | | 6M |
|  | b) | Explain the resistive potential divider for measuring high DC voltages. | | 6M |
|  | | | | |
| 5. | a) | Explain the capacitance potential dividers used for measurement of high ac voltages. | | 6M |
|  | b) | Draw the simple circuit of peak reading voltmeter and explain in brief. | | 6M |
|  | | | | |
| 6. | a) | Briefly explain the factors affecting the corona loss. | | 6M |
|  | b) | Explain the radio interference due to corona. | | 6M |
|  | | | | |
| 7. | a) | Describe how the short circuit test is conducted on circuit breakers. | | 6M |
|  | b) | Briefly explain power frequency testing of insulators. | | 6M |
|  | | | | |
| 8. | a) | Explain Finite Element method of calculating electric field | | 6M |
|  | b) | Discuss briefly Charge Simulation Method for solving field problems and estimation of | | 6M |
|  | | | | |
| 9. | a) | Discuss relative advantages and disadvantages of different numerical methods for solution of field problems. | | 6M |
|  | b) | Explain Finite Difference method of calculating electric field. | | 6M |

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**14EE803 (A)**

**IV/IV B.Tech (Regular) DEGREE EXAMINATION**

**April, 2020 Electrical &Electronics Engineering IV/IV Second semester HIGH VOLTAGE ENGINEERING**

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| **Time:** Three Hours | **Maximum :** 60 Marks | |
| *Answer Question No.1 compulsorily.* | | (1X12 = 12 Marks) |
| *Answer ONE question from each unit.* | | (4X12 = 48 Marks) |

**1.** Answer all questions (1X12=12 Marks)

a) Draw the impulse waveform.

b) State the components of multistage impulse generator.

c) What is resonant transformer?

d) Mention the advantages of generating voltmeter.

e) What are the limitations of series resistance micro ammeter method?

f) What is the use of high speed oscilloscope?

g) Define critical disruptive voltage.

h) Write the Meek's formula for power loss due to corona.

i) Define flash over voltage.

j) Write the Poisson's equation for electrostatics.

k)What is the limitation of boundary element method?

l) What is the governing equation for the electrical potential V for triangular elements in FEM?

**UNIT-I**

2.a Draw and explain the Marx circuit arrangement for multistage impulse generator. 6M

2.b What is Tesla coil?. Explain its operation. 6M

**OR**

3.a A 10 stage Cockcroft Walton circuit has all capacitors of 0.04 µF. The secondary voltage of the

supply transformer is 150Hz. If the load current is 1.2mA,determine the voltage regulation and optimum

number of stages for maximum output voltage. 6M

3.bDiscuss the principle and operation of cascaded transformers for generating high AC

voltages 6M

**UNIT-II**

4.a Explain how a sphere gap can be used to measure the peak value of voltages. 6M

4.b Explain the resistive potential divider for measuring high DC voltages. 6M

OR

5.a Explain the capacitance potential dividers used for measurement of high ac voltages. 6M

5.b Draw the simple circuit of peak reading voltmeter and explain in brief. 6M

**UNIT-III**

6.a Briefly explain the factors affecting the corona loss. 6M

6.b Explain the radio interference due to corona.. 6M

OR

7.a Describe how the short circuit test is conducted on circuit breakers. . 6M

7.b Briefly explain power frequency testing of insulators. 6M

**UNIT-IV**

8.a Explain Finite Element method of calculating electric field 6M

8.b Discuss briefly Charge Simulation Method for solving field problems and estimation of

potential distribution. 6M

**OR**

9.a Discuss relative advantages and disadvantages of different numerical methods for solution of

field problems. 6M

9.b Explain Finite Difference method of calculating electric field. 6M