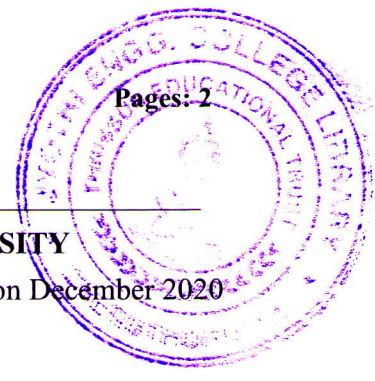


Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 2020

**Course Code:EE369****Course Name: HIGH VOLTAGE ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer all questions, each carries 5 marks.*

Marks

- |   |   |     |
|---|---|-----|
| 1 | Describe with a neat diagram, the working of a simple voltage doubler circuit and its waveforms.                                | (5) |
| 2 | Draw the circuit diagram and mention advantages of resonant transformers used in high voltage AC generation.                    | (5) |
| 3 | Define impulse voltage? Draw a standard impulse wave form.  | (5) |
| 4 | Explain two methods of measuring impulse current.   | (5) |
| 5 | Explain the following terms: i) Withstand voltage ii) Flashover voltage iii) Creepage distance iv) Disruptive discharge voltage | (5) |
| 6 | What is non -destructive testing of insulating materials?   | (5) |
| 7 | List the various tests performed on H.V cables?   | (5) |
| 8 | Explain one power frequency test and one impulse voltage test on Insulators.  | (5) |

**PART B***Answer any two full questions, each carries 10 marks.*

- |    |  |      |
|----|--|------|
| 9  | Explain the working of a Cockcroft -Walton circuit with a neat diagram.  | (10) |
| 10 | a) What is a Cascaded Transformer? Why cascading is done?  | (5)  |
|    | b) With neat diagram explain a three stage Cascaded Transformer. Label the power ratings of various stages of the transformer.   | (5)  |
| 11 | a) A eight stage Cockraft-Walton circuit has all capacitors of 0.05 $\mu$ F. The secondary voltage of the supply transformer is 125 kV at a frequency of 150 Hz. If the load current is 5 mA determine i) the % ripple ii)voltage regulation | (5)  |
|    | b) Explain the generation of high frequency oscillations from a tesla coil?  | (5)  |

**PART C***Answer any two full questions, each carries 10 marks.*

- |    |   |     |
|----|---|-----|
| 12 | a) With a schematic describe operation of a Marx impulse generator used for producing high impulse voltage. | (6) |
|    | b) Draw the basic circuit of Impulse current generator and explain its working.                             | (4) |

- 13 Discuss various resistance potential dividers and compare their performance of measurement of impulse voltages. (10)
- 14 a) Explain with a circuit, the generation of rectangular current pulse of high magnitude. (5)
- b) Explain with neat diagram the principle of operation of an Electrostatic Voltmeter. (5)

**PART D**

*Answer any two full questions, each carries 10 marks.*

- 15 a) Derive the equation for loss tangent. Use relevant phasor diagrams (5)
- b) Explain the high voltage Schering –bridge for the loss tangent and capacitance measurement of insulators or bushing. (5)
- 16 a) Write a note on the classification of High voltage laboratory. (5)
- b) What are the criteria used in selecting the ratings of the testing equipment for h.v. labs? (5)
- 17 a) Explain partial discharge measurement with neat circuit (5)
- b) What are the precautions that are to be taken while grounding an impulse generator? (5)

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