



Sanjay Ghodawat University, Kolhapur

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

2018-19
EXM/P/09/01

Year and Program: 2018-19

School of Technology

Department of Electrical Engg.

Course Code: ELE 506
M.Tech. (Electrical).

Course Title: High Voltage
Engineering

Semester – II Time: 3 Hrs

Day and Date: Friday
24-05-2019

End Semester Examination (ESE)

Max Marks: 100

(2.30 to 5.30 pm)

Instructions:

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.

Q.1	Solve any Two.	Marks	Bloom's Level	CO
a)	Explain with neat sketches the mechanism of lightning discharge.	08	L ₂	CO1
b)	Illustrate the causes of overvoltage and explain principle of insulation co-ordination.	08	L ₃	CO1
b)	Describe the different methods employed for lightning protection of overhead lines?	08	L ₂	CO1
Q.2	Solve any Two.			
a)	Formulate Townsend's current growth equation in gases.	08	L ₆	CO1
b)	Describe the following conduction and breakdown mechanism in commercial liquids:	08	L ₂	CO1
	i. Suspended Particle Theory			
	ii. Cavitations and Bubble Theory			
	iii. Stressed Oil Volume Theory			
c)	Illustrate various mechanisms of breakdown in solids.	08	L ₃	CO1
Q.3	Solve any Two.			
a)	Explain COCKROFT-WALTON voltage multiplier circuit.	08	L ₂	CO2
b)	Sketch equivalent circuit of 3 stages cascaded transformer and determine the expression for short circuit impedance of the transformer.	08	L ₃	CO2
c)	Explain with neat diagram working principle of Van-de-Graaf generator.	08	L ₄	CO2

ESE

Q.4 Solve any Two.

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| a) Classify high voltage measurement techniques. | 08 | L ₄ | CO2 |
| b) Describe the resistance potential dividers methods for measurement of DC voltages | 08 | L ₂ | CO2 |
| c) Justify sphere gap method for measurement of high voltage with neat diagram. | 08 | L ₆ | CO2 |

Q.5 Solve any Two.

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| a) Summarize the principle of operation of an electrostatic voltmeter with neat diagram. | 09 | L ₅ | CO2 |
| b) Sketch schematic diagram of generating voltmeter and explain its principle of operation. | 09 | L ₃ | CO2 |
| c) Modify with neat diagram triggering and synchronization of impulse generator. | 09 | L ₅ | CO2 |

Q.6 Solve any Three.

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| a) Illustrate the testing of overhead line insulators. | 06 | L ₃ | CO3 |
| b) List various tests to be carried out on bushing. | 06 | L ₄ | CO3 |
| c) Point out various tests to be carried out on Circuit Breaker (C.B.) | 06 | L ₄ | CO3 |
| d) Illustrate various tests to be carried out on transformer. | 06 | L ₃ | CO3 |

ESE