



# 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  
Course Title: Elements of  
Electrical Engineering  
(Old Course)

Department of FY B. Tech  
10:30 am to 1:30 pm  
Time: 3 Hrs Semester- II

Course Code: FYT 107

Day and Date: Thursday  
06/06/2019

End Semester Examination (ESE)

Max Marks: 100

## Instructions:

- 1) All questions are compulsory.
- 2) Assume suitable data & Draw diagrams wherever necessary.
- 3) Figures to the right indicate full marks.

Q.1	Solve any Two.	Marks	Bloom's Level	CO
a)	State and explain Kirchhoff's Laws as applicable to electrical circuit with suitable example.	08	L <sub>1</sub>	CO1
b)	Draw and explain B-H curve for magnetic material.	08	L <sub>2</sub>	CO1
c)	State similarities and dissimilarities between electric circuit & magnetic circuit.	08	L <sub>1</sub>	CO1
Q.2	Solve any Two.			
a)	Define RMS value. Derive the expression for RMS value of sinusoidal voltage by analytical method.	08	L <sub>2</sub>	CO2
b)	Define Magnetic flux, Magnetic flux density, mmf and Reluctance.	08	L <sub>1</sub>	CO2
c)	What is power factor? Explain how power factor can be improved by static capacitor method.	08	L <sub>2</sub>	CO2
Q.3	Solve any Two.			
a)	What are the advantages of three phase system over single phase system?	08	L <sub>1</sub>	CO3
b)	Define and explain symmetrical 3 phase supply, phase sequence, 3 phase balanced load.	08	L <sub>1</sub>	CO3
c)	Distinguish STAR connection and DELTA connection in three phase AC circuit.	08	L <sub>2</sub>	CO3

ESE

Page 1/2

- Q.4 Solve any Two.**
- |   |    |                |     |
|---|----|----------------|-----|
| a) State the method of earthing used in electrical system and explain structure of any one with neat sketch.  | 08 | L <sub>2</sub> | CO4 |
| b) Discuss single line diagram of typical power electrical system and explain the stages involved in transmission of electrical power from generating station to consumer premises. | 08 | L <sub>1</sub> | CO4 |
| c) Discuss electric hazards and preventive actions.   | 08 | L <sub>2</sub> | CO4 |
- Q.5 Solve any Two.**
- |   |    |                |     |
|---|----|----------------|-----|
| a) Point out power loss takes place in single phase transformer                                     | 08 | L <sub>4</sub> | CO5 |
| b) Explain transformer efficiency and voltage regulation.   | 08 | L <sub>1</sub> | CO5 |
| c) State the principle on which transformer works. Compare core type and shell type of transformer. | 08 | L <sub>3</sub> | CO5 |
- Q.6 Solve any Two.**
- |  |    |                |     |
|--|----|----------------|-----|
| a) Explain the construction and working of three phase induction motor with suitable diagram.                            | 08 | L <sub>2</sub> | CO6 |
| b) State the types of 3 phase induction motor, Explain any one type of induction motor with neat diagram.                | 08 | L <sub>1</sub> | CO6 |
| c) What is slip? Drive the expression for frequency of rotor current (i.e. $f_r = sf$ ) for three phase induction motor. | 08 | L <sub>2</sub> | CO6 |

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Page 2/2