



# 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 FY B. Tech

Course Code: FYT 107

Course Title: Elements of Electrical  
Engineering (Old Course)

Semester – I

Day and Date: Friday,  
30/11/2018

End Semester Examination (ESE)

Time: 10AM-1PM Max Marks: 100

- Instructions for Students:**
- 1) Use of non-programmable calculator is allowed.
  - 2) All questions are compulsory.
  - 3) Fig. to the right indicates max. marks for the questions.

		Marks	COs
<b>Q1</b>	<b>Solve any Two.</b>		
a)	State and explain Kirchhoff's law as applied to electrical circuits.	08	CO 1
b)	State similarities & dissimilarities between electric circuit & magnetic circuit.	08	CO 1
c)	Write a short note on magnetic leakage and fringing.	08	CO 1
<b>Q2</b>	<b>Solve any Two.</b>		
a)	Derive an expression for impedance of R-L-C series circuit & draw its phasor diagrams.	08	CO 2
b)	Define RMS value & derive the expression for RMS value of sinusoidal current by analytical method.	08	CO 2
c)	Explain power factor improvement using static capacitor. Draw the appropriate phasor diagrams	08	CO 2
<b>Q3</b>	<b>Solve any Three.</b>		
a)	Define & explain the terms: symmetrical 3 phase AC supply, Phase Sequence, Line value & Phase value	06	CO 3
b)	Prove that phase current = $1/\sqrt{3}$ line current in balanced DELTA connected circuit.	06	CO 3
c)	Prove that phase voltage = $1/\sqrt{3}$ line voltage in balanced STAR connected circuit.	06	CO 3
d)	Compare STAR connection and DELTA connection in three phase AC circuit.	06	CO 3
<b>Q4</b>	<b>Solve any Three.</b>		
a)	Define earthing. Explain any one type of earthing with diagram.	06	CO 4
b)	What is fuse? Explain rewirable type of fuse with neat diagram.	06	CO 4
c)	State the causes of electrical accident and give their preventive measures.	06	CO 4
d)	Explain single line diagram (SLD) of electrical power system with different power stages.	06	CO 4

- Q5** Solve any Two.
- |    |  |    |      |
|----|--|----|------|
| a) | Derive the EMF equation for single phase transformer.                              | 08 | CO 5 |
| b) | Draw figures and explain the construction of core type and shell type transformer. | 08 | CO 5 |
| c) | Explain the losses in single phase transformer. How they can be reduced?           | 08 | CO 5 |
- Q6** Solve any Two.
- |    |   |    |      |
|----|---|----|------|
| a) | Explain the concept of slip (s) in three phase induction motor. Drive the expression for frequency of rotor current. (i.e: $f_r = sf$ ) | 08 | CO 6 |
| b) | Explain squirrel cage and wound rotor type induction motor with neat diagram.   | 08 | CO 6 |
| c) | Explain the construction and working of three phase induction motor with neat diagram.  | 08 | CO 6 |

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