



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

Semester – II

Electrical Engineering

Day and Date: Thursday
06/06/2019

End Semester Examination (ESE)

Time: 3 Hrs. Max Marks: 100
10:30 am to 1:30 pm

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 the following.

Marks

Bloom's
Level

CO

- a) Calculate equivalent resistance across node 'AB' & current flowing through 20 ohm resistance as shown in Fig.1a

07

L₃

CO1

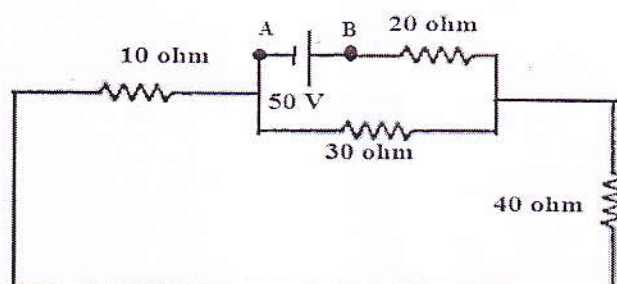


Fig. 1a
OR

- a) State and explain Kirchhoff's law as applied to electrical circuit.
b) Derive the expression for average value of sinusoidal current by analytical method.

07

L₁

CO1

08

L₂

CO2

OR

- b) A resistance of 10 ohm inductance of 107 mH & capacitance of 75 microfarad are connected in series across 250 volts, 50Hz ac supply. Calculate Impedance, current, power factor & its nature, Power drawn by the circuit.

08

L₃

CO2

Q.2 Solve the following.

- a) Point out advantages of three phase system over single phase

07

L₄

CO3

OR

- a) Prove that line voltage = $\sqrt{3}$ phase voltage in balanced STAR connected circuit.

07

L₂

CO3

ESE

Page 1/2

	b)	Describe plate earthing with neat diagram	08	L ₁	CO4
		OR			
	b)	Discuss basic protective devises ^{Devices} of electrical system.	08	L ₂	CO4
Q.3		Solve any Two.			
	a)	Draw & explain magnetization curve for magnetic material and non magnetic material	08	L ₁	CO1
	b)	Derive an expression for impedance of R-L series circuit & draw its phasor diagrams.	08	L ₁	CO2
	c)	Define and explain balance and unbalanced conditions in three phase A.C circuit	08	L ₂	CO3
	d)	Draw and explain single line diagram of electrical power system.	08	L ₁	CO4
Q.4		Solve any Two.			
	a)	Define the transformer & state the types of transformer.	09	L ₁	CO5
	b)	Discover emf equation of single phase transformer	09	L ₃	CO5
	c)	Classify the power losses in single phase transformer.	09	L ₂	CO5
Q.5		Solve any Two.			
	a)	Why single phase I.M. is not self starting?	09	L ₁	CO6
	b)	Explain the construction and working principle of resistance start induction run induction motor.	09	L ₂	CO6
	c)	What are the applications of different single phase induction motors	09	L ₃	CO6
Q.6		Solve any Three.			
	a)	Examine transformer efficiency equation and voltage regulation equation.	06	L ₃	CO5
	b)	Describe transformer ratios of transformer	06	L ₁	CO5
	c)	Explain capacitor start, induction run motor. Draw the phasor diagram & give its application.	06	L ₂	CO6
	d)	Explain construction and working of shaded pole induction motor.	06	L ₂	CO6

ESE

Page 2/2