



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	Semester – II
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	L ₃	CO1

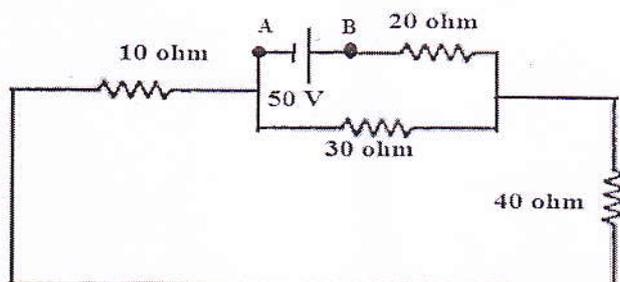


Fig. 1a
OR

- | | | | | |
|----|---|----|----------------|-----|
| a) | State and explain Kirchhoff's law as applied to electrical circuit. | 07 | L ₁ | CO1 |
| b) | Derive the expression for average value of sinusoidal current by analytical method. | 08 | L ₂ | 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 | L ₃ | CO2 |
|----|---|----|----------------|-----|

Q.2 Solve the following.

- | | | | | |
|----|--|----|----------------|-----|
| a) | Point out advantages of three phase system over single phase | 07 | L ₄ | CO3 |
|----|--|----|----------------|-----|

OR

- | | | | | |
|----|--|----|----------------|-----|
| a) | Prove that line voltage = $\sqrt{3}$ phase voltage in balanced STAR connected circuit. | 07 | L ₂ | 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