



Sanjay Ghodawat University, Kolhapur

2017-18

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

FY B Tech

School of Technology

Department: FY B Tech

FYT 107

Elements of Electrical Engineering

Semester – I

Nov 2017

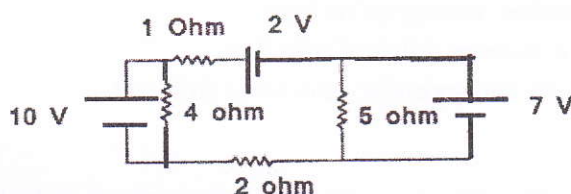
End Semester Examination

Time: 3Hrs, Max Marks: 100

4 DEC

- 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.

- Q1** Solve the following questions. Marks 10 COs CO 1
- a) Find the current in 2 ohm resistance in the circuit given below by mesh analysis.



- b) State and explain Kirchhoff's law as applied to electrical circuits. 06 CO 1
- OR**
- b) Explain the concept of magnetic leakage & fringing. 06 CO 1
- Q2** Solve any Two. 08 CO 2
- a) Explain the concept of self inductance & mutual inductance with neat diagram. 08 CO 2
- b) Derive expression for RMS value of sinusoidal current by analytical method. 08 CO 2
- c) With neat circuit diagram and phasor diagram discuss R-L series circuit. 08 CO 2
- Q3** Solve any Three. 06 CO 3
- a) State the advantages of three phase system over single phase system. 06 CO 3
- b) Prove that line current = $\sqrt{3}$ phase current in balanced DELTA connected circuit. 06 CO 3
- c) Prove that line voltage = $\sqrt{3}$ phase voltage in balanced STAR connected circuit. 06 CO 3
- d) Compare three phase balanced STAR connection and DELTA connection. 06 CO 3

Q4	Solve any Three.	Marks	COs
a)	Define earthing. Explain pipe earthing with suitable diagram.	06	CO 4
b)	What is fuse? Explain rewirable or kitkat type of fuse with neat diagram.	06	CO 4
c)	Explain single line diagram (SLD) of electrical power system with different power stages.	06	CO 4
d)	State causes of electrical accidents. Explain in brief electrical safe practices.	06	CO 4
Q5	Solve any Two.		
a)	Explain the losses in single phase transformer. How they can be reduced?	08	CO 5
b)	Derive the EMF equation for single phase transformer.	08	CO 5
c)	A 50 kVA single phase transformer has 20 turns on primary winding and 300 turns on secondary winding. The primary winding is connected to 2200 V, 50 Hz AC supply. Calculate:	08	CO 5
	1) Secondary voltage on no load.		
	2) The maximum value of core flux.		
	3) Primary and secondary current at full load.		
Q6	Solve any Two.		
a)	Explain the construction and working of three phase induction motor with neat diagram	10	CO 6
b)	Explain the concept of slip (s) in three phase induction motor. Drive the expression for frequency of rotor current. (i.e: $f_r = sf$)	06	CO 6
	OR		
b)	Explain squirrel cage and wound rotor type induction motor with neat diagram.	06	CO 6
