



# COLLEGE OF ENGINEERING & TECHNOLOGY

Department : Electrical & Control Engineering.

Lecturer : Staff.

Course : Electrical Engineering Fundamentals.

Course Code : EE - 239

Marks : 40

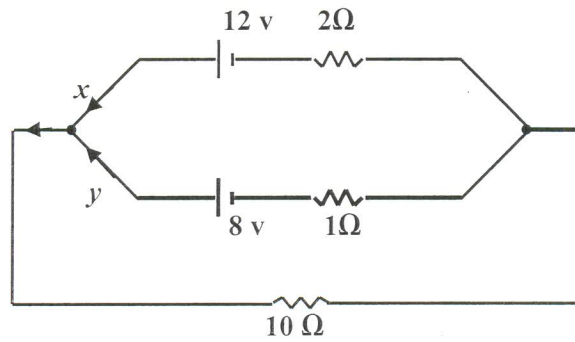
Date : 13 / 1 / 2015

Time : 2 hour

## Answer all the following questions

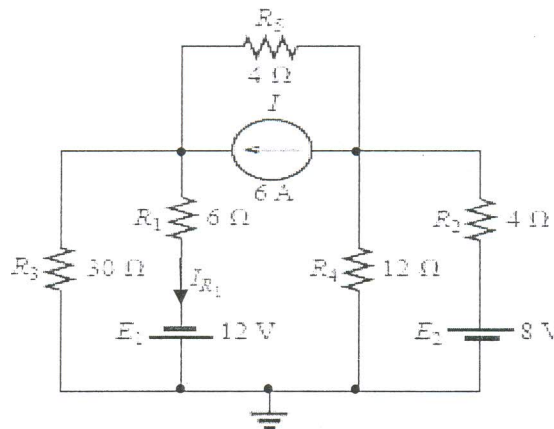
- 1- Use Kirchoff 's laws to find the currents  $x$  and  $y$  in the batteries shown.  
Which battery is charging and which is discharging?

(8 Marks)



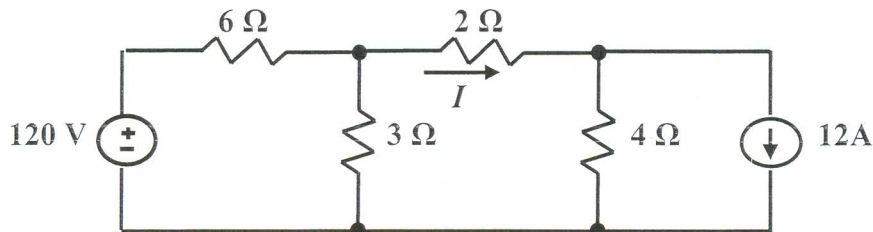
- 2 - Use the node voltage method to find the currents  $I_{R1}$  of the circuit shown.

(8 Marks)



- 3 - Using Superposition Theorem, find the current  $I$  in the  $2 \Omega$  resistance in the circuit shown.

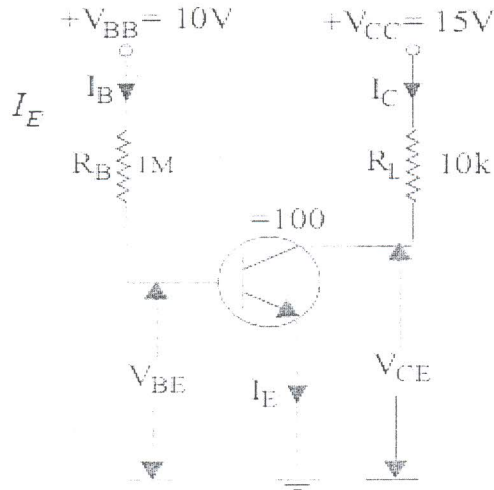
(6 Marks)



Members of course Examination Committee:		Signature:	Date:
Lecturer:	Dr. Abd El Aal Asran	<i>[Signature]</i>	24/12/2014
Course Coordinator :	Prof. Samah El Safati	<i>[Signature]</i>	24/12/2014
Head of Department :	Prof. Hamdy Ashour	<i>[Signature]</i>	18/5/2014

4- For the CE Silicon Transistor amplifier circuit shown in figure, If  $\alpha = 0.98$ .  
Find the following:  $I_B$ ,  $I_C$ ,  $I_E$ ,  $V_{CE}$  and  $\beta$ .

(8 Marks)

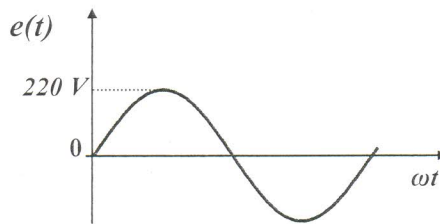


5 -

(10 Marks)

a- Find the average and *r.m.s.* values of the voltage waveform shown in figure (4 Marks)

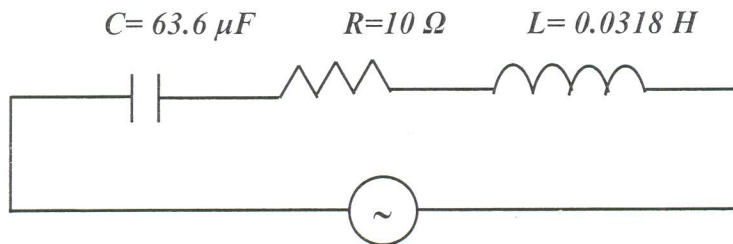
if  $e(t) = 220 \sin 314t$ .



b- A voltage  $e(t) = 100 \sin 314t$  is applied to a series  $R L C$  circuit shown.

$R = 10 \Omega$ ,  $L = 0.0318 \text{ Henry}$  and  $C = 63.6 \mu F$ . (6 Marks)

- i- Find the values of  $X_L$ ,  $X_C$  and the impedance  $Z$ .
- ii- Draw the impedance phasor diagram.
- iii- Write the expression for the current  $i(t)$ .
- iv- Calculate the active power consumed.



$e(t) = 100 \sin 314 t$

**Good Luck**

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