

COLLEGE OF ENGINEERING & TECHNOLOGY



Department : Electrical & Control Engineering

Lecturer : Department Staff

Course : Electrical Engineering fundamentals

Course Code: EE 239

Time: 2 hours

Date : 17 / 1 / 2016

Mark: 40

Final Exam Paper

Answer the following questions:

Question one

Using mesh current method OR node voltage method, find the current I_o in the 1Ω resistor and the power developed in the $2A$ current source for the circuit shown in figure (1).

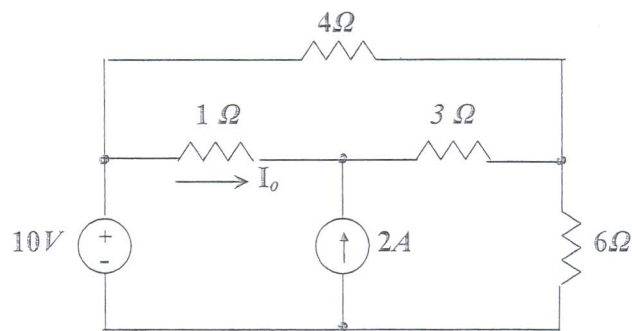


Figure (1)

(9 Marks)

Question Two

Using source transformation OR superposition theory, find the current I in the 3Ω resistor for the circuit shown in figure (2)

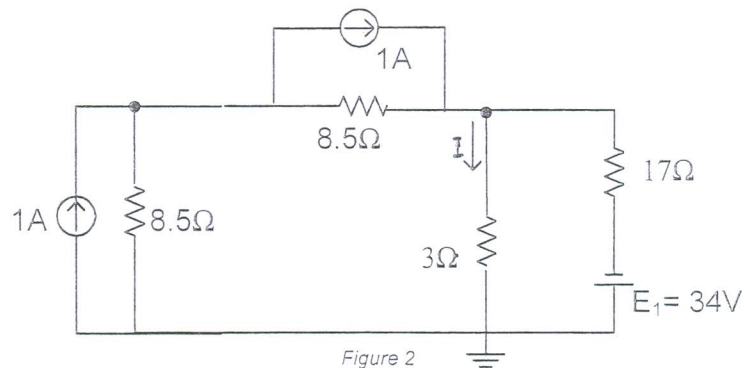


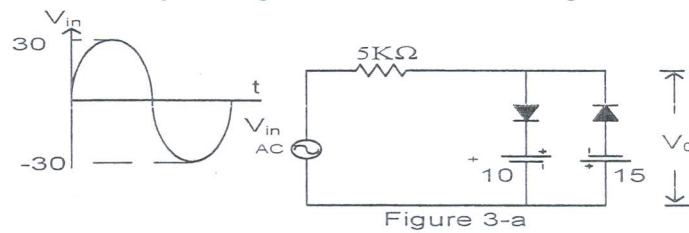
Figure 2

(9 Marks)

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Question three

(a) Sketch the waveform of the output voltage of the circuit shown in figure 3-a



(b) For the circuit shown in figure 3-b find I_B , I_C , I_E and V_{CE}

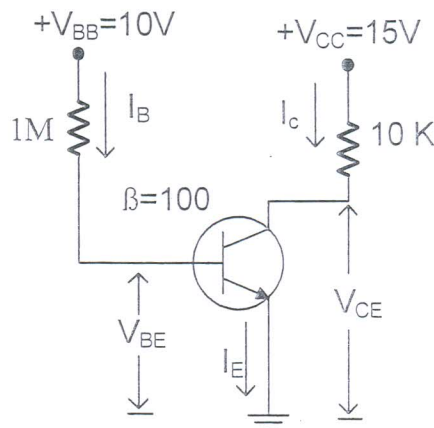


Figure 3-b

(10 Marks)

Question four

(a) Sketch the waves $50 \sin(\omega t + 0^\circ)$, $5 \sin(\omega t - 60^\circ)$ and $50 \cos(\omega t)$. then Find the average value and the effective (RMS) value for the waveforms (4 Marks)

(b) For the circuit shown in figure (4), given $e(t) = 311.13 \sin(314t + 15^\circ)$ volt, find:-
 (i) The total circuit impedance. (ii) The expression of the current $i(t)$.
 (iii) The active power (iv) The power factor.

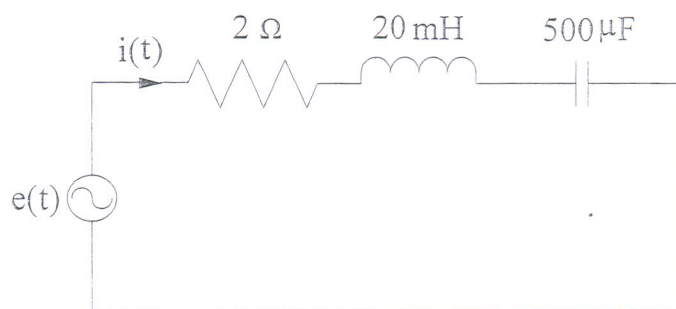


Figure (4)

(8 Marks)

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