



# COLLEGE OF ENGINEERING & TECHNOLOGY

Department : Electrical & Computer Control Engineering

Lecturer : Staff

Course : Electric Eng. Fundamental

Marks: 40

Course Code: EE 238

Time : 2 hours

Date : 18 / 1 / 2015

## Final Exam

### Answer the following questions:

1] For the circuit shown in Fig.1, find the current  $I$  using:

- i. Mesh current method.
- ii. Node voltage method

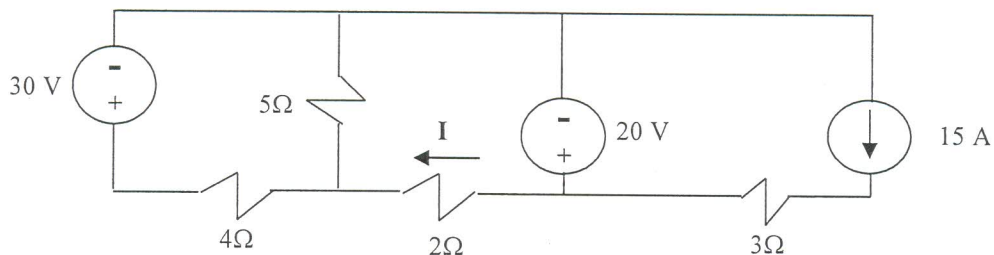


Fig.1

(10 marks)

2] For the circuit shown in Fig.2, find the voltage  $V$  using the source transformation method.

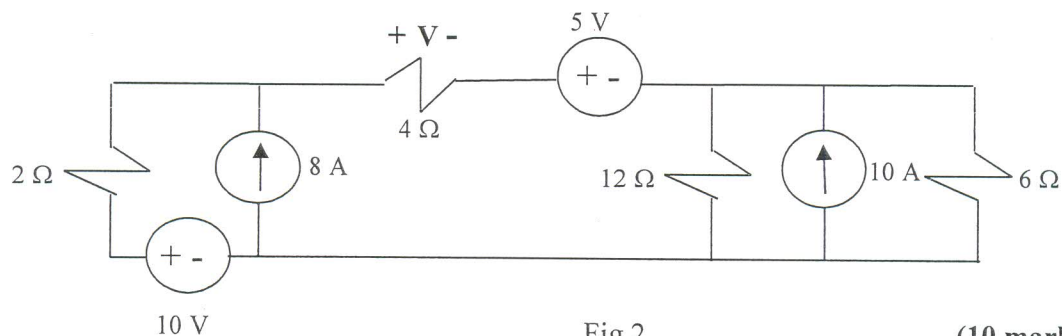


Fig.2

(10 marks)

Members of course Examination Committee:	Signature:	Date:
Lecturer: Prof. Dr. Amany Hanafy		17 / 1 / 2015
Course Coordinator : Prof. Dr. Samah El Safty		17 / 1 / 2015
Head of Department: Prof.Dr. Hamdy Ashour		17 / 1 / 2015

- 3] In the magnetic circuit shown in Fig.(3), the core length is 48 cm and the air gap length is 16 mm. The cross section area of the core is  $8 \text{ cm}^2$ . The relative permeability of the core material is 800. Calculate the ampere-turn required to produce a flux of 0.6 mwb in the air gap.

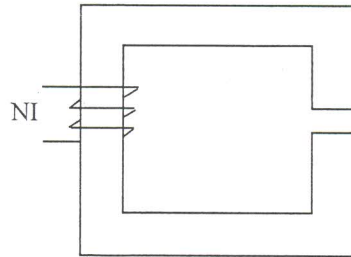


Fig.3

(8 marks)

- 4] a) Find the average value and the effective value of the voltage waveform shown in Fig.4.

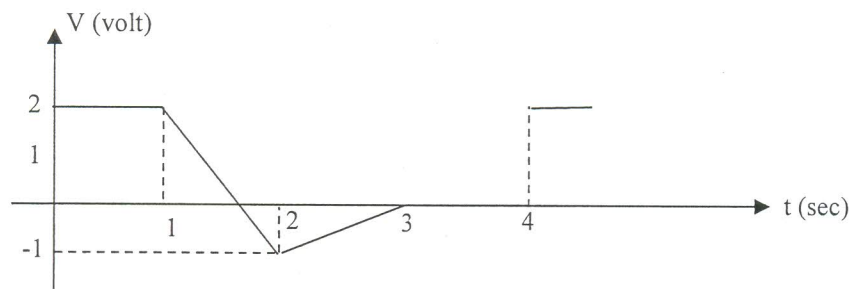


Fig.4

(6 marks)

- b) For the unknown circuit shown in Fig.5,  $e(t) = 10 \sin(\omega t) \text{ V}$  and  $i(t) = 2 \cos(\omega t - 53.13) \text{ A}$ . Find:

- The circuit impedance  $Z$  in the simplest series form.
- The average power  $P$ .
- The power factor of the circuit and state whether it is leading or lagging.

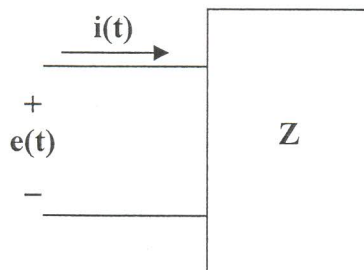


Fig.5

(6 marks)

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