UNIVERSITY OF SWAZILAND

FACULTY OF SCIENCE AND ENGINEERING DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

MAIN EXAMINATION:	2015
TITLE OF PAPER:	BASIC ELECTRICAL ENGINEERING
COURSE NUMBER:	EE251 *
TIME ALLOWED:	3 HOURS

INSTRUCTIONS:

ANSWER ALL FIVE (5) QUESTIONS.

MARKS FOR DIFFERENT SECTIONS ARE SHOWN ENCLOSED IN SQUARE BRACKETS.

THIS PAPER HAS FOUR (4) PAGES INCLUDING THIS PAGE.

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Question 1 (20 marks)

In the circuit of Figure 1,

- (a) Find the current i_o using nodal analysis. (b) Find the current i_o using mesh analysis.



[10] [10]

Question 2 (17 marks)

In the circuit of Figure 2,

(a) Find R so that maximum power is transferred to the resistance R.	[15]
(b) Find this maximum power.	[2]



Question 3 (20 marks)

Use <u>superposition</u> to find the current i_0 in the circuit in Figure 3.



Question 4 (18 marks)

For the circuit in Figure 4, find Vs.





Question 5 (25 marks)

For the unbalanced circuit in the Figure 5, find:

- (a) the line currents,
- (b) the total complex power absorbed by the load, and
- (c) the total complex power supplied by the source.



[15]

[5]

[5]