



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2016/2017

**FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF SCIENCE WITH INFORMATION
TECHNOLOGY**

MAIN CAMPUS

MIT 101: BASIC CONCEPTS OF IT

Date: 5th December, 2016

Time: 12.00 - 3.00 pm

INSTRUCTIONS:

- Answer question ONE and any other TWO questions.
- Show all the necessary workings
- No calculators are allowed during this examination.
- Show all your working in the answer booklet provided.



QUESTION ONE (COMPULSORY) (30 marks)

- a) Define Information Technology (IT) [2 mks]
- b) Define a computer [2 mks]
- c) State whether the following is a hardware or software:
- i) The internet [1 mk]
 - ii) Internet explorer [1 mk]
 - iii) Scanner [1 mk]
- d) State and explain the two uses of a RAM [6 mks]
- e) Convert the following decimal numbers to the bases stated
- i) 515_{10} to binary [2 mks]
 - ii) 840_{10} to base 3 [2 mks]
 - iii) 786_{10} to base 7 [2 mks]
- f) Convert 204_5 to binary [3 mks]
- g) State and explain the two main types of memories in a computer [4 mks]
- h) State and Explain the two main uses of RAM [4 mks]

QUESTION TWO (20 marks)

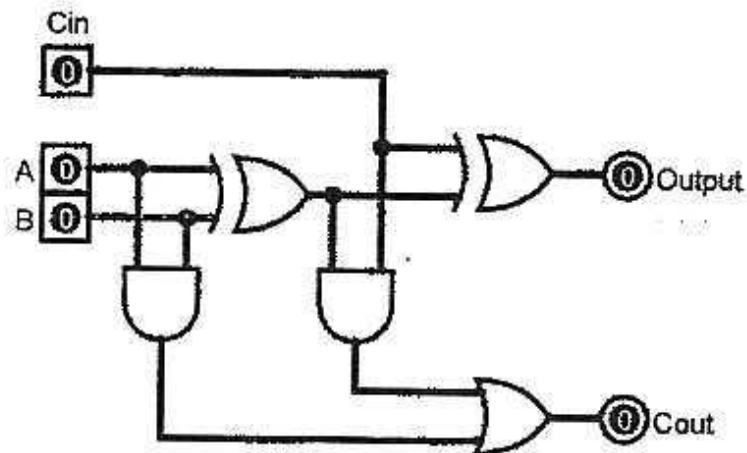
a) With the aid of an example, describe the seven logic operators

[7 mks]

b) Study the three scenarios below and present them graphically using logic gates.

- i) You want to go to university. You can go to university if you get a scholarship or if you pay for it all yourself. [1 mk]
- ii) You have 1 square of chocolate left. You and your friend want to eat it. Once one of you eats it, you will have no more chocolate. Both of you cant eat the chocolate. [1mk]
- iii) You have 2 friends in your house and two cups of juice. You want to drink a cup of juice, but you will give them to your friends if they want juice [1 mk]

c) Study the circuit below.



Draw and complete the truth table from the above circuit

[10 mks]

QUESTION THREE (20 marks)

a) State and explain the five types of computers [10 mks]

b) Explain which type of computer is suitable in the following circumstances

i) A type of computer often used by small and medium-sized companies, or by departments in very large organizations.

[2 mks]

ii) I want to move a lot with my computer. [2 mks]

iii) I want a slightly less processing power and storage capacity, and substantially cheaper computers, that I require to work only when connected to a central computer [2 mks]

iv) I want a cheap computer, with low processing power and storage [2 mks]

v) I am interested in processing and storing information for many different users [2 mks]

QUESTION FOUR (20 marks)

a) Convert the following decimal numbers to hexadecimal

i) 1111111_2 [2 mks]

ii) 1100111_2 [2 mks]

b) Convert the following decimal numbers to hexadecimal.

i) 3.145_{10} [3 mks]

ii) 4.2134_{10} [3 mks]

c) Convert the following binary numbers to base 8 first, hence multiply and leave the result in base 8

i) $101010_2 \times 110011_2$ [4 mks]

ii) $10011011_2 \times 101111_2$ [4 mks]

d) Given that 412 is in base 6, convert it to decimal. [2 mks]

QUESTION FIVE (20 marks)

a) State the three methods for expressing negative binary numbers

[3 mks]

b) Using the three methods in (a) above and 6-bit binary numbers, calculate $-14 + -3$. Convert your answers to decimal numbers.