KENYA METHODIST UNIVERSITY

END OF TRIMESTER I EXAMINATION, APRIL 2008

Faculty : Science and Social Studies

Department : Computer and Information Science

Course Code : CISY 304

Course Title : microprocessor programming

Time : 2 hours

Instructions : Answer question one and any other two questions

QUESTION ONE (COMPULSORY)

a) With the aid of a clear diagram, describe the architecture of a microprocessor. [4 marks]

b) Explain the concept of portability as it applies to programming languages. With reasons, explain whether an assembly program is portable. [4 marks]

c) Translate the following C++ expression to assembly language.

x = (y*4) + 3 [5 marks]

d) List five different input devices. [5 marks]

e) Convert the following Hexadecimal numbers to their Binary equivalent

i) 0126F9D4
ii) 6ACDFA95
iii) F69BDC2A [6 marks]

f) Describe the three basic modes of operation of Intel IA-32 architecture. [6 marks]

Answer any two questions from this section

QUESTION TWO

a) Describe at least four (4) CPU status flags. [8 marks]

b) Write an assembly program that subtracts three integers using only 16 bit registers. Insert a statement that displays the register values. [12 marks]

QUESTION THREE

Write an assembly language program that displays the following information on the screen.

Name:
Date_of_Birth:
Course: [20 marks]

QUESTION FOUR

a) Addressing modes refer to the way operands are presented in the operation. State at least FIVE addressing modes used by an 8086 processor, giving appropriate examples. [10 marks]

b) MOV is a flexible operand as long as some four rules are followed. State these four rules. [4 marks]

c) Describe, with examples, at least THREE arithmetic instructions used in assembly programming. [6 marks]

QUESTION FIVE

Write an assembly program that evaluates the expression;

rval=-xval + (yval - zval)

where rval, xval, yval and zval are known constants. [20 marks]