(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR

THIRD YEAR SUPPLEMENTARY EXAMINATIONS

BACHELOR OF COMPUTER SCIENCE

COURSE CODE: BCS 322

COURSE TITLE: MICROPROCESSOR SYSTEMS

DATE: FRIDAY 29-07-2022 **TIME:** 2.00p.m. – 4.00p.m.

INSTRUCTIONS TO CANDIDATES

Question ONE (1) and Any OTHER 2 questions

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over. ▶

Question1 (30marks) compulsory
  a) Explain any 2 differences between Von Neumann and Harvard microprocessor architectures
     2 marks

  b) Distinguish between the following pairs of Intel 8085 instructions. State the addressing
mode of each.
(i) DAB B and ADC B   3 marks
(ii) XRA M and XCHG   3 marks
  c)(i) Explain a multiprocessor system and state 2 advantages   4 marks
     (ii) what is programmed I/O   2 marks
  .d) An 8 bit microprocessor with a 16-bit address bus requires PROM space of 4K bytes and
RAM spaces of 16K bytes, occupying a continuous space .Draw the memory map of the
system.   6 marks
e). i) Distinguish between partial and full decoding as used in address decoding in microprocessors
2 marks

ustrating how the stack memory is effected, describe the sequence of events occur when
CALL and RETURN instructions are executed
.4 marks
   iii) Differentiate between maskable interrupts and non-maskable interrupts with examples.
6 marks

            Question 2   (20 marks).
a) Explain why direct memory Access is preferred in transferring blocks of data than either the
polling or the interrupt input/output methods.   2 marks
  b) Explain the following addressing modes i) direct   3 marks
                                           ii) indirect   3 marks
                                           iii) relative address   3 marks
c) i) Explain i) the use of 'W' bit in opcode   3 marks
   ii)use of IP register   3 marks
   iii) packed BCD format   3 marks

            Question 3   (20 marks).
  a) Write a ALP program to add two 16 bit numbers   10 marks
  b) Write a STACK BASED program to ADD 2 numbers then multiply by 2   10 marks

Question 4

  a) state the word length of an 8-bit microprocessor   2 marks
  b) Explain the technology used by Intel to design its first 8-bit microprocessor   4 marks
  c) Differentiate between registers and main memory of a microprocessor   4 marks.
  d) Explain masking of an interrupt, state the flag is used to mask INTR interrupt   6 marks
  e) Describe special-purpose registers of a microprocessor   4 marks

            Question 5   (20 marks).
i) Explain 6 flags in the flag register   6 marks
     ii Explain how execution time of an instruction calculated   4 marks
  a) What is the value in AL after the following instructions are executed MOV AL, 35H;
                                                                         ADD AL,49H;
                                                                         DAA   6 marks

  b) Discuss 2 software interrupts   4 marks