



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MEDICAL ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN MEDICAL ENGINEERING

EEP 2351: MICROPROCESSOR SYSTEMS

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: 13 May 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

- (a) Differentiate between a microprocessor and a microcontroller (4 marks)
- (b) Name any TWO registers in an 8085 microprocessor giving their function (4 marks)
- (c) Give THREE advantages and ONE disadvantage of assembly language (5 marks)
- (d) Normally a microprocessor operation require three addresses to be specified; two source and one destination addresses. Explain how the microprocessor reduces them to two addresses. (2 marks)
- (e) Distinguish between registers and semiconductor memories (4 marks)
- (f) Describe the sequence of operations in a memory write operation (4 marks)
- (g) With the aid of diagram(s) explain how reading is performed in a single bit core memory. (7 marks)

Question TWO

- (a) i) With the aid of a diagram describe the structure of a microcomputer (5 marks)
- ii) Explain the mode of operation of a microcomputer (6 marks)
- (b) Determine the number which is in the A-register after execution of each instruction in the following sequence
- MVI A, 13
ADI 41
DAA
- (9 marks)

Question THREE

- (a) With the aid of a diagram of a Bipolar static RAM cell, explain
- i) the read operation
- ii) the write operation (8 marks)
- (b) 1 K x 8 PROMS are combined to produce a total capacity of 8K x 8. Determine:-
- i) the number of PROMs chips are needed
- ii) the number of address bus lines required
- iii) Draw the chips arrangement and their interconnections and explain
- iv) Give the memory map that illustrates the range of addresses for the different PROMs (12 marks)

Question FOUR

Design a flowchart and write an assembly language program to sum together the even numbers from 0 to 20

(20 marks)

Question FIVE

(a) Explain the following ROM applications

- i) Microcomputer program application
- ii) Bootstrap memory
- iii) Implementing combinational logic

(6 marks)

(b) With the aid of a diagram(s) explain how charge is transferred in a three phase charge coupled device

(14 marks)