

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCE
COMPUTER SCIENCE DEPARTMENT
DECEMBER EXAMINATIONS 2005

SUBJECT: MICROPROCESSORS AND OPERATION SYSTEMS
CODE: SCS5104

INSTRUCTION TO CANDIDATES

This question paper consists of two sections.
Answer any **THREE** questions from section A and any **TWO** questions from section B
Each question carries 20 marks

Time: 3 hours

SECTION A

QUESTION ONE

- a) Compare and contrast the internal architectures of the Intel 8085 and the Motorola MC 6800 microprocessors [8]
- b) How is a software counter implemented in an 8085 microprocessor? Write an Assembler program that implements a counter. [8]
- c) State five tristate signals found in the Intel 8085 microprocessor and explain the rationale behind the implementation of tristate devices [4]

QUESTION TWO

- a) Explain how you would Interface 1K x 4 RAM ICs to an 8085 microprocessor showing clearly, selection logic, register identification lines, demultiplexing the address/data bus. [10]
- b) State the machine cycles in each of the following instructions [4]

SUB B

ADI 47H

STA 8000H

PUSH B

Section B

QUESTION SIX

- a) Explain the replacement algorithms employed by operating systems in memory management [10]
- b) Outline the conditions that are necessary and sufficient for a deadlock to occur. [10]

QUESTION SEVEN

- a) Microprocessor Scheduling deals with the problem of determining which of the processes in the ready queue is to be allocated the microprocessor. Discuss any six microprocessor scheduling techniques you are familiar with. [17]
- b) Explain any three situations that can lead to process termination [3]

QUESTION EIGHT

Compare and contrast UNIX and Windows Operating Systems under the following features:

- i) Security [14]
- ii) Stability [6]

END OF QUESTION PAPER