

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCE
COMPUTER SCIENCE DEPARTMENT
AUGUST SUPPLEMENTS EXAMINATIONS 2004

SUBJECT: MICROPROCESSORS AND EMBEDDED SYSTEMS
CODE: SCS2202

INSTRUCTION TO CANDIDATES

Answer any four questions

Time: 3 hours

QUESTION ONE

- a) State performance metrics for a microprocessor. [5]
- b) Compare and contrast stack implementation in a microcontroller and a microprocessor. [5]
- c) When is a VLSI referred to as a microprocessor and when is it referred to as a microcontroller? [2]
- d) Define a transducer and describe five transducer classes based on their transduction methods. [13]

QUESTION TWO

- a) Describe 5 addressing modes of an MC6800 microprocessor. [10]
- b) Which of the following MC6800 instructions will cause a R/W signal to go low?
 - i) ASL extended mode
 - ii) ASLA
 - iii) INX
 - iv) JMP
 - v) ORAB direct mode
 - vi) STAB direct mode [6]
- c) What are the possible problems a designer might face if she/he replaces a microcontroller by a microprocessor [4]
- d) Given MC6800 instructions STAA \$80 and LDAA \$80. Explain the operational difference of the two instructions. [5]

QUESTION THREE

- a) Give a detailed SWI execution sequence in an MC6800. [10]
- b) Outline the operations of VME modules [10]
- c) Why might a stepper motor be preferred over DC servomotor in positioning the pen on a chart plotter? [5]

QUESTION FOUR

- a) Draw the pinout of the GPIB connector [17]
- b) What else does the GPIB data lines carry besides data? [3]
- c) What is the rationale behind the huge number of input/output ports in a 8051 microcontroller [5]

QUESTION FIVE

With the aid of diagrams describe the major components of a control system. [25]

END OF QUESTION PAPER



GOOD LUCK!