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

SUBJECT: MICROPROCESSORS AND EMBEDDED SYSTEMS
CODE: SCS2202

INSTRUCTION TO CANDIDATES

Answer any four questions.

Time: 3 hours

QUESTION ONE

a) What is the relationship between the microprocessor's addressing space and the number of address and data lines. [5]

b) State and explain the six flags found in the CCR register [5]

c) Write an Assemble language source code for a routine that determines how many bits in the given two data bytes are different [15]

QUESTION TWO

a) Outline the trends in microprocessor and micro controller development [10]

b) It can be said that the 8051 drives initially port 0 and port 2 for very memory access, how does this happen? [5]

c) Distinguish between a data acquisition system and a control system [10]

QUESTION THREE

a) Describe the internal architecture of an MC6800 microprocessor [15]

b) Memory redundancy should be avoided in the design of embedded systems. In a microprocessor system with 16 address lines a 4K-byte ROM chip can be selected when the three highest-order bits are all at logic high. Is there any redundancy in this system? Explain your answer with the aid of a diagram [5]

c) How does a microcontroller 8051 identify the type of memory it is accessing? [5]

QUESTION FOUR

a) State and describe any three bit-addressable registers in an 8051 microcontroller [6]

b) Compare and contrast a processor and a microprocessor [4]

c) When is a timer regarded as:

i) a counter

ii) a watchdog [3]

[6]

b) Explain giving examples any three addressing modes of an MC6800 microprocessor [6]

QUESTION FIVE

a) Outline the interrupt system organisation in an MC6800 microprocessor-based system [15]

b) Describe the main characteristics of an embedded system [10]

END OF QUESTION PAPER