

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF
SCIENCE IN PHYSICS

PHYS 477: MICROPROCESSOR II

STREAMS: BSC. PHYS

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 23/04/2025

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS

- Answer question ONE and any other TWO questions
- Do not write on the question paper

QUESTION ONE (30 marks)

1. List and discuss the functions of various components of a computer 12 marks
2. Explain the difference between a microprocessor and a CPU 2 marks
3. Explain the difference between a microprocessor and a microcomputer 2 marks
4. Define the following terms 4 marks
 - i) Bit
 - ii) Byte
 - iii) Word
 - iv) Instruction
5. Explain the difference between machine language and assembly language of 8085 microprocessor 2 marks
6. Discuss the four drawbacks of writing a program in machine language 4 marks
7. Define the term compiler as used in microcomputers 1 mark
8. Discuss the advantages of high level languages over assembly language 4 marks

Question Two 20 marks

- a) Define the term operating system 1 mark
- b) Using a well labelled diagram discuss how the operating system interacts with the various hardware components. 8 marks
- c) Distinguish between a computer hardware and software 2 marks
- d) Using a well labelled diagram discuss the hierarchical relationship between a computer hardware and software 9 marks

Question Three (20 Marks)

- a) Discuss the following terms: 6 marks
 - i. Micocontroller
 - ii. Program monitor
 - iii. nibble
- b) A typical microprocessor-controlled temperature system is expected to read the temperature in a room, display the temperature at a liquid display (LCD) panel, turn on a fan if the temperature is above the set point and turn on a heater if the temperature is below a set point.
With the help of a diagram discuss the various components 14 marks

Question Four (20 marks)

- a) With the help of a diagram discuss the components of 8085 hardwareprogramming model 6 marks
- b) With relevant examples discuss the following 8085 instruction set 8 marks
 - i. Data transfer opreations
 - ii. Arithmetic operation
 - iii. Logical operation
 - iv. Branching operation
- c) Draw the flowchart for the instructions to subtract two bytee already stored in memory register 2051H and 2052H. Location 2051H holds the byte 49H and location 5052H holds 9FH. Subtract the first byte from the second byteand store the answer in the memory location 2053H.
Write instructions beginning with memory location 2030H 6 marks

Question Five (20 marks)

- a) Explain the need to demultiplex the bus AD₇-AD₀ 2 marks
- b) List the sequence of events that occurs when the 8085 MPU reads from memory 10 marks
- c) Identify the appropriate control signals that are generated at the output 2-to-4 decoder shown in figure 1 8 marks

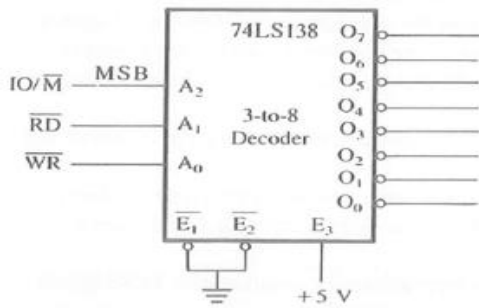


Figure 1

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