Bachelor Level / second-semester / Science   Full Marks: 60
Computer Science and Information Technology (CSC 162)   Pass Marks: 24
Microprocessor   Time: 3 Hours

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Group A

Attempts any TWO questions

1. Draw block diagram of 80286 and explain its functional units.
2. Explain instruction cycle, machine cycle and T-States. Draw timing diagram of STA instruction. Make necessary assumptions.
3. Write an assembly language program to find the smallest number in an array using 8 bit microprocessor. (Assume appropriate array data and address where minimum array size of 15 should be considered.)

Group B

Attempts any EIGHT questions

4. Differentiate between vectored and non-vectored interrupts. Where and how 8259 PIC can be used to handle interrupts.
5. Explain the addressing modes of 8085 microprocessor with examples
6. Write an ALP for 8086 to read a string and display the string in uppercase.
7. What is system bus? Explain different types of system bus in detail.
8. How DTE and DCE are wired using Rs-232 cable. Explain the process of double handshake I/O.
9. What is instruction set? Explain various kind of instructions of 8085 microprocessor.
10. What is mean by memory interfacing? Explain the address decoding process in the 8085 microprocessor.
11. Explain how pipelining is achieved in 8086 microprocessor.
12. Write short notes on:

    a) Von Neumann architecture
    b) Macro Assembler

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Group A

Attempt any TWO questions:(2 x 10 = 20)

1. Draw block diagram of 80386 and explain its functional units.
2. Describe the working mechanism of DMA. Draw the internal architecture of the 8237 DMAC along with a timing diagram illustrating the process of DMA transfers.
3. Write an assembly language program to find the greatest number in an array in using 8 bit microprocessor. (Assume appropriate array data and address where minimum array size of 20 should be considered.)

Group B

Attempt any Eight questions:(8 x 5 = 40)

4. Explain the addressing modes of 8086 microprocessor with examples.
5. Write an ALP for 8086 to read string and print it in the reverse order.
6. Differentiate between PUSH and POP instruction with example illustrating the use of these instruction.
7. Write the process of address and data separation in DE-multiplexed address/data bus in 8085 microprocessor.
8. What is CALL operation? How does it differ with JUMP operation?
9. Differentiate between synchronous and asynchronous serial communication. Show DTE-DTE and DTE-DCE connection according to RS-232 serial communication standard.
10. What is flag? Explain the flags that are present in 8085 microprocessor.
11. What is instruction set? Explain various Kinds of instructions of 8086 microprocessor.
12. Write short notes on:
    a. Harvard architecture
    b. GDT and LDT

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Group A

Attempts any TWO questions

1. Explain instruction cycle, machine cycle and T-states. Draw timing diagram of IN instruction with brief description.
2. Draw block diagram of 80286 microprocessor and explain its main four functional sub-units. Differentiate between Real Address Mode and Protected Virtual address mode.
3. Explain LXI and CMP instruction. Write an assembly language program for 8-bit microprocessor to divide 8 bit data stored in memory location 8050 by 8 bit data stored in 8051 and store the quotient in 8052 and remainder in 8053.

Group B

Attempts any EIGHT questions

4. What are the different modes of parallel communication? Construct a control word for 8255 PPI for following configuration:

    Port A and Port C_{upper} – mode 0

    Port B and Port C_{lower} – mode 0

    Port A and Port C_{upper} as input port

    Port B and Port C_{lower} as output port

5. Differentiate between interrupt based I/O and DMA based I/O. Explain based DMA operation in brief
6. Differentiate between PUSH and POP instruction with example illustrating the use of these instruction.
7. Write an assembly language program for 16 bit microprocessor to reverse the string "This is Microprocessor"
8. What is the use of $AD_7 – AD_0$ in 8085 microprocessor? Explain address de-multiplexing process in 8085 microprocessor with suitable diagram.
9. What is mean by addressing mode? Explain all the addressing mode available in 8085 microprocessor.
10. Explain Register Organization in 80386 microprocessor.
11. Draw a logic diagram showing generation of memory and I/O read/write control signals in 8085 microprocessor.
12. Write short notes on (Any two):

    a) Program Counter
    b) Von-Neumann Architecture
    c) Interrupt Masking

Candidates are required to give their answers in their own words as far as practicable.

Group A

Attempts any TWO questions (2 x 10 = 20):

1. What is instruction cycle? Draw timing diagram of MOV A, B. Make necessary assumptions.
2. Explain the architecture of 80386 with required figure. Highlight on its register organization.
3. Write an assembly language program to find the largest number of an array using 8 bit microprocessor. (Assume appropriate array data and address where minimum array size of 15 should be considered)

Group B

Attempts any EIGHT questions (8 x 5 = 40):

4. Write an assembly language program for 8086 to read two strings and check whether they are same or not.
5. Explain different types of instruction group of 8085.
6. Explain different addressing modes of 8086.
7. Explain the concept of multitasking in 80286.
8. What are the practical implications of asynchronous serial communication? Explain DTE-DCE connection according to RS-232 serial communication standard.
9. What is the purpose of Programmable Peripheral Interface 8255A? Explain about its different ports.
10. Explain memory read operation with suitable figure.
11. What are the different kinds buses? How and why de-multiplexing of buses is carried out in 8085.
12. Write short notes on (Any TWO):
    a) LDT
    b) DMA
    c) Assemble directives

Bachelor Level / First Year / Second Semester / Science   **Full Marks: 60**

Computer Science and Information Technology (CSC167)   **Pass Marks: 24**

Microprocessor (NEW COURSE)   **Time: 3 hours**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Section A

Long answer questions.

Attempt any <u>TWO</u> questions. 10*2=20

1. Differentiate between 8085 and 8086 microprocessor. Explain the concept of demultiplexing of address bus and why is it required?
2. Write an Assembly Language Program for calculating the factorial of a number using 8085 microprocessor.
3. Draw the block diagram of 80286 microprocessor and explain.

Section B

Short answer questions.

Attempt any <u>EIGHT</u> questions. 8*5=40

4. What is paging? Explain the concept of memory access in protected mode.
5. What is the importance of direct memory access? Explain the mechanism of direct memory access.
6. List different types of ports. What are the main characteristics of programmable interrupt controller 8258A?
7. Differentiate between instruction cycle and machine cycle. Draw timing diagram of MVI A, 32 H.
8. Write an Assembly Language Program to reverse the given string.
9. Explain different types of system buses and also indicate whether they are unidirectional or bidirectional.
10. What is the significance of interrupt masking? Differentiate between vectored and polled interrupt.
11. Illustrate memory access in GDT.
12. Write short notes on:
    a) Jumps
    b) Accumulator