

KATHMANDU UNIVERSITY  
End Semester Examination  
February, 2025

Marks Scored:

Level : B.E./B.Sc.  
Year : II

Course : COMP 231  
Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date : 16 FEB 2025

SECTION "A"

[20 Q. × 0.5 = 10 marks]

**Choose and mark [X] in the most appropriate option from each set of choices**

- Which addressing mode is used when the operand is directly specified in the instruction itself?  
 Immediate addressing mode                       Direct addressing mode  
 Indirect addressing mode                               Indexed addressing mode
- Which components are NOT found on chip in a microprocessor but may be found on chip in a microcontroller?  
 SRAM & USART     EPROM & PORTS  
 EPROM, USART & PORTS                                       SRAM, EPROM & PORTS
- Which interrupt in the 8085 microprocessor is non-maskable?  
 RST 7.5                       INTR                       TRAP                       RST 6.5
- Which instruction in the 8085 microprocessor is used to disable all interrupts?  
 EI                       DI                       HLT                       NOP
- In the 8086 microprocessor, which of the following flags is set if the result of an arithmetic operation is zero?  
 Carry flag                       Sign flag                       Zero flag                       Overflow flag
- The 8086 microprocessor operates in which of the following modes?  
 Real mode only     Protected mode only  
 Both Real and Protected mode                                       Virtual mode
- Which of the following statements about DMA is true in the context of the 8086 microprocessor?  
 The CPU is actively involved in every data transfer during DMA operations  
 DMA transfers data between peripherals and memory without CPU intervention  
 DMA cannot access the memory directly  
 DMA increases the number of clock cycles required for data transfer
- Consider the following set of 8085 instruction.  
MVI A,82H  
ORA A  
JP DSWLY  
XRA A  
DSPLY:OUT PORT1  
HLT  
The output at PORT1 is  
 00H                       FFH                       92H                       11H



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18. Which of the following is the correct sequence of operations in a microprocessor?
- Opcode fetch, memory read, memory write, I/O read, I/O write
  - Opcode fetch, memory write, memory read, I/O read, I/O write
  - I/O read, opcode fetch, memory read, memory write, I/O write
  - I/O read, opcode fetch, memory write, memory read, I/O write
19. What is the role of the Terminal Count (TC) signal in the 8237 DMA controller?
- It initiates the DMA transfer process
  - It signals the end of a DMA transfer on a channel
  - It resets the DMA controller
  - It enables the bus for DMA operation
20. Which of the following is an advantage of using DMA in an 8086 microprocessor system?
- It reduces the amount of power consumption
  - It increases the CPU's processing time for other tasks
  - It eliminates the need for memory
  - It disables the interrupt system



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SECTION "B"

[6 Q. × 4 = 24 marks]

Attempt *ANY SIX* questions:

1. Explain the pin diagram of 8085 microprocessor with a figure.
2. Discuss the addressing modes of 8086 microprocessor with example.
3. Describe the instruction sets of 8086 microprocessor.
4. Explain the pin configuration and signal functions of the 8286 bus transceiver.
5. What are the different modes of operation in the 8259 Programmable Interrupt Controller, and how do they influence interrupt handling?
6. Explain the use of 8288 bus controller and in which mode it is used. Illustrate with a block diagram, major parts of 8288 controllers.
7. Discuss the process of stack operations in the 8086 microprocessor and the significance of the stack pointer and base pointer.

SECTION "C"

[2 Q. × 8 = 16 marks]

Attempt *ANY TWO* questions:

8. Explain the architecture of the 8086 microprocessor, emphasizing its main components and their functions.
9. Explain the modes of operation in 8254 programmable Interval timer. Mention the features of 8254 microprocessor with its pin diagram.
10. Explain the concept of cycle stealing in Direct Memory Access and its impact on system performance. Describe the DMA transfer process and the different types of DMA transfer modes.

