

KATHMANDU UNIVERSITY
End Semester Examination [C]
June/July 2024

Level : B.E./B.Sc.
Year : II
Time : 2 hrs. 30mins.

Course : COMP 231
Semester : II
F. M. : 40

SECTION "B"

[6Q. × 4 = 24 marks]

Attempt *ANY SIX* questions.

1. Explain the different modes of DMA operation and provide examples where each mode is useful. How does each mode optimize data transfer efficiency in specific conditions?
2. Explain functional block diagram of Intel 8086 microprocessor with figure.
3. Discuss the programming model of the 8085 microprocessor. Explain how instructions are encoded and executed, and provide examples of assembly language programs for common tasks.
4. What are the categories of instruction in microprocessor? Explain 8288 bus controller with diagram.
5. Explain the architecture and important features of the 8254 Programmable Interval Timer. How does it function within a computer system, and what are its primary operating modes?
6. What do you mean by Basic State Transitions? Explain bus transceiver 8286 with diagram.
7. Describe the concept of a subroutine in assembly language. How does it enhance code reusability, modularity, and maintainability? Provide examples of conditions where subroutines are beneficial.

SECTION "C"

[2Q. × 8 = 16 marks]

Attempt *ANY TWO* questions.

9. Describe the pin diagram of the Intel 8086 microprocessor. Highlight its key addressing modes. How does its architecture differ from 8085 microprocessor?
10. Evaluate the impact of the 8259A on system reliability and performance. Discuss the operational modes of the 8259A. How do these modes furnish to different interrupt handling scenarios in computer systems?
11. Explain the evolution of the x86 architecture from its inception to modern implementations. What are its key features and limitations, and how did they shape the design of subsequent x86 processors? Also discuss the registers found in x86 processor.

6. For the purpose of data processing an efficient assembly language programmer makes use of the general purpose registers rather than memory. The reason is
 The set of instructions for data processing with memory is limited
 Data processing becomes easier when register are used
 More memory related instructions are required
 Data processing with registers takes fewer cycles than that with memory
7. While programming for any type of interrupt, the interrupt vector table is set
 Externally Through a program
 Either externally or through the program Externally and through the program
8. The ESC instruction of 8086 may have two formats. In one of the formats, no memory operand is used. Under this format, the number of external op-codes (for the co-processor) which can be specified is
 64 128 256 512
9. Which statement is **FALSE** about WR signal?
 WR signal controls the input buffer
 The bar over WR means that this is an active low signal
 The bar over WR means that this is an active high signal
 If WR is 0 then the input data reaches the latch input
10. In the instruction, ASSUME CS : CODE, DS : DATA, SS : STACK the ASSUME directive directs to the assembler the
 address of the stack segment
 pointer address of the stack segment
 name of the stack segment
 name of the stack, code and data segments
11. In protected mode, how many bits is the addressable memory space in the x86 architecture?
 16-bit 24-bit 32-bit 64-bit
12. What happens when both OE (Output Enable) and DIR (Direction) are active in the 8286?
 Data flows from A to B Data flows from B to A
 Both buses are in a high-impedance state Data transmission is bidirectional
13. DB, DW and DD directives are used to place data in particular location or to simply allocate space without preassigning anything to space. The DW and DD directives are used to generate:
 Offsets
 Full address of variables
 Full address of labels
 Offsets of full address of labels and variables

