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BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – Dip.EE-2022/Dip.EE-2023
Course Name – Microprocessor and Microcontroller
Course Code - DEEPE501A
(Semester V)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Choose the primary function of a microprocessor.

a) Execute instructions and perform data processing
b) Store data and run applications
c) Display graphics and images
d) Connect to the internet and browse websites

(ii) Identify the component that is considered the "brain" of a microcomputer.

a) Monitor
b) Keyboard
c) Microprocessor
d) Hard drive

(iii) Identify the total addressable memory space of the 8086 microprocessor.

a) 1 MB
b) 4 MB
c) 16 MB
d) 64 MB

(iv) Determine the generation of microprocessors that introduced the concept of a 32-bit architecture.

a) 1st generation
b) 2nd generation
c) 3rd generation
d) 4th generation

(v) Select the register that is used to point to the current segment in conjunction with pointer registers for the 8086 microprocessor.

a) IP (Instruction Pointer)
b) CS (Code Segment)
c) DS (Data Segment)
d) SS (Stack Segment)

(vi) Indicate the primary use for the Destination Index (DI) register.

a) Storing data for arithmetic calculations
b) Pointing to the destination for string operations
c) Managing the stack
d) Storing the current instruction address

(vii) Identify the data bus width of the Intel 8085 microprocessor.

a) 4 bits
b) 8 bits
c) 16 bits
d) 32 bits

(viii) Define the flag in the flag register of the Intel 8085 to indicate overflow.

a) OV (Overflow Flag)
b) CY (Carry Flag)
c) Z (Zero Flag)
d) S (Sign Flag)

(ix) Predict the instruction used to perform a conditional jump based on the zero flag (Z) in the Intel 8085.

a) JMP
b) JC
c) JNZ
d) CALL

(x) Determine which pin of the Intel 8085 microprocessor is used to indicate the start of an instruction fetch operation.

a) ALE (Address Latch Enable)
b) AD7 (Address/Data Bit 7)
c) S0 (Status Bit 0)
d) S1 (Status Bit 1)

(xi) Determine which pin of the Intel 8085 microprocessor is responsible for reading data from external memory or I/O devices during a memory read operation.

a) RD (Read)
b) WR (Write)
c) IO/M (Input/Output or Memory)
d) ALE (Address Latch Enable)

(xii) Identify the primary purpose of the Flag Register in the 8086 microprocessor.

a) To store memory addresses
b) To perform arithmetic calculations
c) To manage I/O operations
d) To indicate the status of the processor and control operations

(xiii) Identify the role of the "fetch" machine cycle in the 8085 microprocessor.

a) To execute the instruction
b) To decode the instruction
c) To fetch the instruction opcode from memory
d) To store the instruction in memory

(xiv) In the context of the 8085 microprocessor, indicate what the "decode" machine cycle involves.

a) Executing the instruction
b) Fetching the instruction from memory
c) Deciphering the operation to be performed by the instruction
d) None of the option

(xv) Determine which signal in the timing diagram of the 8085 microprocessor is active-low during the execution of memory and I/O read operations.

a) RD
b) WR
c) S1
d) S2

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Define bit, byte, and word. (3)

3. Describe the difference between hardware and software interrupts. (3)

4. *Define ALE and identify the operations performed by ALU in the 8085 microprocessor.* (3)

5. Differentiate between a microprocessor and a microcontroller. (3)

6. Discuss the salient features of the 8051 family of controllers. (3)

OR

Define how many ports are available on the 8051 microcontroller. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Define some applications for 8051 microcontrollers. (5)

8. Explain the timer and counter of the 8051 microcontroller. (5)

9. Compare the addressing modes of 8086 with respect to their utility in memory access. (5)
10. Explain the features of 8085 in detail. (5)

11. Draw and describe the architecture of the 8085 microprocessor. (5)

12. Explain the development and classification of microcontrollers. (5)

OR

Categorize jump instructions used in 8051. (5)

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