BRAINWARE UNIVERSITY

Term End Examination 2022
Programme – MCA-2020/MCA-2021/MCA-2022
Course Name – Computer Architecture and Microprocessor
Course Code - MCA103
(Semester I)

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) Select the high-speed storage elements of ALU

a) Semiconductor memory
b) Solid state memory
c) Registers
d) Integrated circuit

(ii) Select the unit of a computer system which executes program, communicates with and often controls the operation of other subsystems of the computer

a) CPU
b) Both CPU and Control Unit
c) Control Unit
d) MMU

(iii) Decide which feature reduction has been deployed by CISC and RISC architectures

a) Cost
b) Time delay
c) Semantic gap
d) All of these

(iv) Choose the architecture where Pipe-lining is a unique feature

a) RISC
b) CISC
c) INA
d) IANA

(v) Test Booth's multiplication algorithm

a) multiplies two unsigned binary numbers in two's complement notation
b) multiplies two signed binary numbers in two's complement notation
c) multiplies two signed binary numbers in 1's complement notation
d) multiplies two signed binary numbers in modulus notation

(vi) Anticipate the BUS through which video devices are connected

a) PCI
b) USB
c) HDMI
d) SCSI

(vii) Match universal logic gate.

a) XNOR
b) NOR
c) XNOR
d) NOT

(viii) Match the binary number 1111000011110000 to hexadecimal number

a) F000
b) F010
c) F0F0
d) F0F1

(ix) Match 2's Complement of 10101011

a) 1011101
b) 1010101
c) 1010100
d) 1110101

(x) Express decimal 23268 into BCD

a) 00100011001001101001'
b) 00100011001001101010'
c) 00100011001001101100'
d) 00100011001001101000'

(xi) Indicate which is not a type of ROM

a) PROM
b) SROM
c) EPROM
d) EEPROM

(xii) Express the full form of DMA.

a) Direct Memory Access
b) Discrete Memory Access
c) Direct Memory Architecture
d) Discrete Memory Architecture

(xiii) Choose the addressing mode where operand is given explicitly in the instruction

a) Absolute
b) Immediate
c) Indirect
d) Direct

(xiv) Discover the main usage of ROM chips

a) MMU
b) System files
c) Page table
d) Boot files

(xv) Predict the disadvantage of the EPROM chip

a) The high cost factors
b) The need to remove the chip physically to reprogram it
c) The low efficiency
d) The low speed of operation

Group-B
(Short Answer Type Questions)   3 x 5=15

2. Explain briefly the fixed, and floating-point representation of numbers.   (3)
3. Illustrate memory hierarchy.   (3)
4. Analyse the two different ways of writing in cache memory.   (3)
5. Create 8085 pin Diagram.   (3)
6. Discuss all the flags in 8085.   (3)

OR

Discuss the block diagram of a digital computer.   (3)

Group-C
(Long Answer Type Questions)   5 x 6=30

7. Differentiate PROM, EPROM and EEPROM.   (5)
8. Calculate the vector address of RST 7 and RST 7.5.   (5)
9. Deduce De Morgan's theorem for N variables.   (5)
10. Calculate 5 X (-2) using Booth's multiplication algorithm.   (5)
11. Construct a 4K X 4 RAM using 1K X 4 RAM.   (5)
12. Describe the working principle of a typical CMOS SRAM.   (5)

OR

Describe Von Neumann Architecture.   (5)

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