859

June 2022

307/4(N)

COMPUTER SYSTEM ORGANIZATION

Time Allowed: 3 Hours *Full Marks: 60*

Answer the following questions from Group-A, B & C as directed.

GROUP –A

1. Choose the correct alternative (Any ten) 1 x 10=10

i) The number successful accesses to memory stated as a fraction is called as _____.
a) Access rate b) Success rate c) Hit rate d) Miss rate

ii) The final addition sum of the numbers, 0110 & 0110 is _____
a) 1101 b) 1111 c) 1001 d) 1010

iii) What does CSA stands for? a) Computer Service Architecture b) Computer Speed Addition c) Carry Save Addition d) None of these

iv) Individual control word of the micro routine are called as- a) Micro task b)Micro instruction c)Micro operation d)Micro Command

v) Which of the following circuit convert the binary data into a decimal? a) Decoder b) Encoder c) Code converter d) Multiplexer

vi) The situation wherein the data of operands are not available is called _____ a) Data hazard b) Stock c) Deadlock d) Structural hazard

vii) What is the full form of CISC? a) Complex Instruction Sequential Compilation b) Complete Instruction Sequential Compilation c) Computer Integrated Sequential Compiler d) Complex Instruction Set Computer

viii) The alternate way of writing the instruction, ADD #5,R1 is-a) ADD [5],[R1]; b) ADDI 5,R1; c) ADDIME 5,[R1]; d) There is no other way

ix) In order to read multiple bytes of a row at the same time, we make use of –
a) Memory extension b) Cache c) Shift register d) Latch

x) In full adders the sum circuit is implemented using _____.
a) And & or gates b) NAND gate c) XOR d) XNOR

xi) Computer address bus is _ . a) Unidirectional b) Bidirectional c) Multidirectional d) None of the above

xii) Which of the following computer bus connects the CPU to a memory on the system board?
a) Expansion bus b) Width bus c) System bus d) None of the above

xiii) The instructions that are used for reading an input port and writing an output port respectively are -
a) MOV, XCHG, b) MOV, IN, c) IN, MOV, d) IN, OUT

xiv) Micro operation is shown as: - a) R1←R2 b) R1+R2 c) Both d) None

xv) An interrupt that can be temporarily ignored is-
a) Vectored interrupt b) Non-maskable interrupt c) Maskable interrupt d) High priority interrupt

2. Fill in the blanks (Any ten): 1 x 10=10

i) _____ is used to store data, instructions and results permanently for future use.
ii) _____ is generally used to increase the apparent size of physical memory.
iii) Gray Code is also called as _____.
iv) Instruction register stores _____.
v) A high speed memory is placed between the CPU and the primary memory is known as _____.
vi) I/O address in 8086 is _____ bit.
vii) Techniques that automatically move programs and data blocks into the physical memory when they are required for execution are called _____.
viii) Hit ratio is maximum in _____ mapping
ix) The bias value for single-precision floating point numbers is _____.
x) MOV AX, [2A50] is an example of _____ addressing mode.
xi) Loop unrolling is a technique to improve_____.
xii) Page table resides in _____.
xiii) Microinstruction consists of _____.
xiv) The smallest entity of memory is called_____.
xv) A source program is usually in _____language.

1 x 10 =10

3. Answer the following question (any ten)

i) How control unit controls other units?
ii) Give an example of a 4 bit, 8bit, 16-, and 32 bit microprocessor.
iii) What is Bus?
iv) What is MAR and MDR?
v) What is register?
vi) What is interrupt?
vii) What is non-volatile memory?
viii) What is logical address?
ix) Which is an error-detecting code?
x) What is the logic shift?
xi) What type of device converts digital signal into a form that is intelligible to the user?
xii) Which memory stores instruction which is required to start a computer?
xiii) Define clock rate.
xiv) What is the RAID system?

GROUP –B

2x6=12

4. Answer the questions (Any six)

i) What are the three main elements of the control unit?
ii) What is Cache memory?
iii) What is control memory address?
iv) What is the 2's complement representation of -6?
v) What is clock signal in COA?
vi) Is USB is a bus?
vii) Draw the block diagram of the half adder.
viii) Draw a multiplication circuit diagram.
ix) What's the difference between interrupt service routine and subroutine?
x) What do you mean by the write-back policy?
xi) What is RISC Pipeline?
xii) What size of MUXs are needed?

GROUP –C

5. Answer the question (any one): 6x1

a) Explain the components of the Computer system and what is micro operation?
b) Represent $(12.625)_{10}$ in 32 bit floating point representation and what is odd parity checker?
c) Describe the Von-Neumann Architecture with diagram? Explain the Bus Structure with examples

6. Answer the question (any one): 6x1

a) Describe the Flag Register of 8086 microprocessor.
b) Perform multiplication between 23 and 17 using fixed point multiplication algorithm.
c) What are the key characteristics of micro-programmed control?Explain different types of micro operation.

7. Answer the question (any one): 6x1

a) Discuss the various mapping techniques used in cache memory.
b) What is virtual memory? How does it work?
c) How can you interface RAM and the ROM EPROM to microprocessor 8086? What is the use of EPROM?