MARWADI UNIVERSITY

Faculty of Technology

Computer Engineering / Information Technology Engineering

B.Tech   **SEM: 4th**   **SUMMER:2018**

_____

Subject: - (Computer Organization) (01CE0402)   **Date:- 21/04/2018**

Total Marks:-100   **Time: - 03:00 hours**

Instructions:
1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question: 1.

(a)   Select correct option for following questions.   [10]

1) Where the result of an arithmetic and logical operation are stored ?
a. Accumulator   b. Cache Memory   c. ROM   d. None

2) Whenever CPU detects an interrupt, what it do with current state ?
a. Save   b. Discard   c. Depends system to system   d. First finish it

3) RISC stands for ?
a. Risk Instruction Source Computer   b. Reduced Instruction Set Computer   c. Risk Instruction Set Computer   d. Risk Instruction Set Computing

4) The performance of the cache memory is measured in terms of ?
a. Hit Ratio   b. Chat Ratio   c. Miss Ratio   d. None

5) Which registers can interact with the secondary storage
a. MAR   b. PC   c. TR   d. None

6) During the execution of a program which gets initialized first
a. MDR   b. IR   c. PC   d. MAR

7) What converts the programs written in assembly language into machine instructions.
a. Machine compiler   b. Interpreter   c. Assembler   d. Converter

8) What indicate the starting position in memory, where the program block is to be stored?
a. ORG   b. START   c. HEX   d. None

9) Which directive specifies the end of execution of a program.
a. LDA   b. STA   c. END   d. XCHNG

10) Interrupts which are initiated by an I/O drive are known as
a. Internal   b. External   c. Software   d. All

(b)   Short Que. (answer in one sentence)   [10]
        1. Convert the following binary number to decimal numbers   [02]
            01011, 011101, 1010101.

        2. Obtain the 2's complement of following eight-digit Binary numbers   [02]
            1010110, 10000001, 10000000

        3. Define following term.   [06]
                1. Compiler
                2. Parallel processing
                3. Accumulator
                4. Micro-operation
                5. Effective address
                6. sequencer

Question: 2.

(a)   Explain instruction cycle.   [08]

(b)   List out all addressing mode and explain all addressing mode.   [08]

OR

(b)   Explain SIMD, SISD, MISD, MIMD   [08]

Question: 3.

(a)   Compare direct addressing vs indirect addressing   [08]

(b)   List out basic computer register with size and write a function of each.   [04]

(c)   Explain Tri-state buffer with block diagram and details.   [04]

OR

(a)   Compare RISC vs CISC   [08]

(b)   List out input-output instruction with proper meaning   [04]

(c)   Explain Data Transfer Instruction with description.   [04]

Question: 4.

(a)   Explain interrupt cycle.   [08]

(b)   Draw and explain Adder Subtractor circuit   [04]

(c)   A Computer uses a memory unit with 256K words of 32 bits each. A binary   [04]
        instruction code is stored in one word of memory. The instruction code has
        4 parts. Indirect bit, opcode, register code part to specify one of 64 registers
        and address part.
        4.   How many bits are there in opcode, register code part and the address part?
        5.   Draw Instruction word format and Indicate the number of bits in each part.

6. How many bits are there in the data and address inputs of memory?

OR

(a)	Explain arithmetic pipeline	[08]
(b)	Draw and explain Timing and control circuit block diagram.	[04]
(c)	Starting from an initial value of R = 11011101, Determine the sequence of binary values in R after a logical shift – left, followed by a circular shift-right, followed by a logical shift – right and a circular shift-left	[04]

Question: 5.

(a)	Explain instruction pipeline with flowchart	[08]
(b)	Differentiate Hardwired Control vs Micro Programmed Control.	[04]
(c)	Apply selective set, selective complement and selective clear operation With suitable example.	[04]

OR

(a)	Explain CPU-IOP Communication with diagram	[08]
(b)	List out register reference instruction with name	[04]
(c)	Solve following infix expression into post fix and evaluate using stack. (3+4) [10(2+6) 8]	[04]

Question: 6.

(a)	Solve multiplication using Booth algorithm for (+15) * (-13)	[08]
(b)	Draw 4-bit arithmetic circuit.	[04]
(c)	Explain cache mapping techniques with details.	[04]

OR

(a)	Solve multiplication using Booth algorithm for (-8) * (+7).	[08]
(b)	Draw common bus system using general purpose registers	[04]
(c)	Explain pipeline conflicts with details	[04]

---Best of Luck---

Que. Paper weight-age as per Bloom's Taxonomy

No.	Que. Level	% of weight-age	
		% of weight -age	Que. No.
1	Remember/Knowledge	23.25	1(B), 1(B), 2(B), 3(B), OR 3(B), OR 5(B)
2	Understand	27.90	2(A), OR 2(B), 2(C), OR 2(C), 4(B), OR 4(B), 5(B),
3	Apply	23.25	4(B), OR 4(B), 5(C), OR 5(C), 6(A), OR 6(A), 6(B), OR 6(B)
4	Analyze	16.27	3(A), OR 3(A), 4(C), OR4 (C), 5(B)
5	Evaluate	9.30	OR 5(A), 6(C), OR 6(C)
6	Higher order Thinking	0	

GRAPH: