SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES.
(AUTONOMOUS)
CHITTOOR

MCA DEPARTMENT

QUESTION BANK

For

COMPUTER ORGANIZATION AND ARCHITECTURE(18MCA114)

Regulation – 2018

Academic Year 2018 – 19

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QUESTION BANK

Subject Name : COMPUTER ORGANIZATION AND ARCHITECTURE   Academic Year:2018-19

Subject Code :18MCA114   Year & Sem :I & I

S. No	QUESTIONS	Blooms Taxonomy Level
	UNIT -I	
	Digital Logic Circuits and Digital Components Digital Logic Circuits: Logic gates - Boolean Algebra - Map Simplification - Combinations Circuits - Flip flops - Sequential Circuits. Digital Components: Integrated circuits – Decoders – Multiplexers – Registers - Shift Registers - Binary Counters - Memory unit.	
	Part -A	
1	**Explain** the functional units of a general computer?	Understand
2	**Explain** X-OR gate with Truth table.	Understand
3	**List** out the Boolean Algebra identities.	Remember
4	**Explain** briefly about K-Maps.	Understand
5	**Define** Combinational Circuits.	Remember
6	**Draw** J-K Flip Flop block diagram & characteristic table	Analysis
7	**Define** Sequential Circuits.	Remember
8	**Explain** briefly about types of Integrated Circuits	Understand
9	**Explain** Multiplexer functionality.	Understand
10	**Discuss** Encoder and Decoder	Understand
	Part- B	
1	**Explain** briefly about Logic gates with neat diagrams	Understand
2	**Discuss** Boolean Algebra in detail	Understand
3	**Explain** Map simplification technique and Simplify the following Boolean expression with neat diagram. $\sum(X,Y,Z) = \sum(1,3,5,6,8,9)$	Understand
4	**Differentiate** various types of Flip Flops	Analysis
5	**Draw** Decoder circuit and its Characteristic table	Analysis
5	**Explain** the working of shift register with parallel load	Understand
6	**Explain** in detail about binary counters	Understand
7	**Explain** i) ROM ii) PROM iii)EPROM iv)EEPROM.	Understand
8	**List** types of integrated circuits classified based on logic family	Remember
	UNIT- II	
	Data Representation, Basic Computer Organization **Data Representation:** Data types – Complements - Fixed point representation - Floating point representation - Error detection coders. **Basic Computer Organization:** Instruction codes - Computer registers - Computer instructions - Timing and control - Instruction cycle – Memory reference instruction, Input output and interrupt.	

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	Part - A	
1	**Apply conversion** on Decimal code to find Binary code (i) 3426 (ii) 798	Evaluation
	Evaluate 2' Complement of the following binary code (i) 10011010 (ii) 10101011	Evaluation
2	**Define** Fixed point representation.	Remember
3	**Define** Floating point representation.	Remember
4	**Explain** Parity check error detection	Understand
5	**List** out the different computer instruction formats?	Remember
6	**Differentiate** hardwired control unit and micro programmed control unit with an example?	Analysis
7	**Define** Interrupt	Remember
8	**List** out registers used basic computer	Remember
9	**List** memory reference instructions	Remember
	Part - B	
1	**Explain** signed representation of integers	Understand
2	**Distinguish** between Fixed point and Floating point representation	Analysis
3	**Explain** parity bit error detection technique and draw parity checker circuit.	Understand
4	**Discuss** hardwired control unit and micro programmed control unit?	Understand
5	**Define** an interrupt? Explain Types of interrupts?	Remember
6	**Define** an instruction format? Explain different types of instruction formats in detail.	Remember
7	**Explain** conditional branch instructions?	Understand
8	**Compare** different instruction formats?	Analysis
9	**Define** program interrupt? Explain External interrupts and internal interrupts.	Remember
	UNIT- III	

Pipeline and Vector Processing

Parallel Processing – Pipelining - Arithmetic Pipeline - Instruction Pipeline - RISC Pipeline - Vector Processing - Array Processors.

	Part - A	
1	**Explain** the advantage of parallel processing	Understand
2	**Define** Pipelining	Remember
3	**Explain** the performance consideration in pipeline format?	Understand
3	**Explain** Arithmetic Pipelining	Understand
4	**Explain** Instruction Pipelining	Understand
5	**List** Vector processing applications	Remember
6	**Discuss** RISC pipelining	Understand
7	**Define** Memory Interleaving	Remember
8	**Explain** Array processing	Understand
	Part - B	

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1	**Explain** Pipelining technique and its advantages in detail with suitable example.	Understand
2	**Explain** Arithmetic Pipelining with a suitable example	Understand
3	**Explain** Instruction Pipelining with a suitable example	Understand
4	**Discuss** Vector processing applications	Understand
5	**Discuss** RISC pipelining	Understand
6	**Explain** Memory Interleaving methods	Remember
7	**Explain** Array processing	Understand
8	**Distinguish** between normal processing and parallel processing	Analyze

UNIT-IV

Introduction to 8085 Microprocessor

Microprocessor Based system -Hardware and Interfacing: Microprocessors - Microcomputers and Assembly Language - 8085 Microprocessor Architecture - The 8085 MPU, Example of an 8085 based Microcomputer - Programming the 8085 - Introduction to 8085 Assembly language Programming.

Part- A

1	**List** out the major features of 8086 Microprocessors?	Remember
3	**Explain** about index registers?	Understand
4	**Classify** the usage of SI and DI registers?	Apply
5	**List** out the sequence of signals that occurs on address bus and data bus when microprocessor fetches an instruction?	Remember
6	**Explain** why 8086 internal architecture is divided into BIU and EU? Discuss the A-bus, B-bus and C- bus and their use?	Understand
7	**List** the internal registers in 8086 Microprocessor?	Remember
8	**Explain** the advantages of pipelining?	Understand
9	**Explain** which are the pins of 8086.	Understand
10	**Define** microprocessors and evolution of microprocessors?	Understand

Part - B

1	**Classify** flag register in 8086 and explain flag instruction set?	
2	**Explain** the functional block diagram of 8086and write about the functions of each block?	Understand
3	**Differentiate** between physical address, effective address and offset address?	Analyze
4	**Describe** pin diagram of 8086 and explain each pin?	Apply
5	**Describe** the following instructions with examples i)IMUL ii) XLATE iii) XCHG iv) MOVSB	Understand
6	**Explain** Arithmetic instruction set of 8086 with examples?	Understand
7	**Explain** data transfer instructions of 8086 with examples?	Understand
8	**Distinguis**h macros & procedures?	Analyze
9	**Explain** short notes on JUMP instructions with examples?	Understand
10	**Identify** the logical instructions available in 8086?	Understand

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	UNIT- V	
	The Memory Some Basic Concepts - Semiconductor Ram Memories - Read-Only Memories - Speed, Size and Cost - Cache Memories - Performance Considerations - Virtual Memories.	
	Part - A	
1	**List** the various types of semiconductor RAMs?	Remember
2	**Define** Random Access Memory and types of RAMs present?	Remember
3	**Explain** the necessary for memory hierarchy?	Understand
4	**Define** HIT and MISS ratio in memory with an example?	Remember
5	**Differentiate** SRAM and DRAM?	Analyze
6	**State** the differences between static and dynamic memories?	Remember
7	**Define** virtual or logical address?	Remember
8	**Define** cache memory? Explain how it is used to reduce the execution time?	Remember
9	**Explain** the mapping procedures adopted in the organization of a Cache Memory?	Understand
10	**Discuss** the function of a TLB? (Translation Look-aside Buffer)	Understand
11	**Differentiate** volatile and non volatile memory organization?	Analyze
12	**Discuss** the multilevel hierarchy of storage devices?	Understand
13	**Explain** memory management unit (MMU)?	Understand
14	**Discuss** the enhancements used in the memory management?	Understand
15	**Explain** basic concept of virtual memory technique?	Understand
16	**Define** Memory Access Time?	Remember
17	**Distinguish** between the write-through and write-back policies pointing out their merits and demerits?	Analyze
18	**Define** the virtual memory organization and explain briefly?	Remember
19	**Explain** cache memory to reduce the execution time?	Understand
20	**Define** CPU registers, Main memory, Secondary memory and cache memory?	Remember
	Part - B	
1	**Explain** briefly about memory hierarchy?	Understand
2	**Discuss** RAM and ROM chips with diagrams?	Understand
3	**State** and Explain virtual memory organization technique?	Remember
4	**Describe** in detail about associative memory?	Understand
5	**Define** cache memory? Explain Associative mapping technique?.	Remember
6	**Define** a mapping function? Explain Set-Associative mapping technique?	Remember
7	**Define** virtual memory? Discuss Address mapping using pages in virtual memory?	Remember
8	**Criticize** i) Write through policy ii) write back policy iii) Hit and Miss ratio.	Analysis
9	**Explain** virtual memory Address translation?	Understand
10	**Explain** briefly about Memory connection to CPU?	Understand