K M M INSTITUTE OF POSTGRADUATE STUDIES::TIRUAPTI
MCA I - SEMESTER / PRE-FINAL/ COMPUTER ORGANIZATION

Time: 3Hrs   **Max.Marks:100**

PART – A

Answer any five of the following questions   **(5x5=25)**

1. Explain how to measure the performance of a computer.
2. Explain any one universal gate with diagram.
3. Explain about carry look ahead addition.
4. What is bus arbitration? Compare centralized and distributed arbitration?
5. What is Big-Endian and Little-Endian? Explain with an example?
6. With an example explain floating point operations.
7. Discuss the encoding of machine instructions.
8. With an example illustrate the concept of interrupts.
9. Brief upon the different types of memory?
10. Explain about DMA with a neat diagram.

PART – B

Answer any one full question from each unit   **(5x15=75)**

Unit-1

1. a) Explain the single bus structure of a computer with a neat diagram.
   b) write the basic performance equation and explain how increase and decrease in clock rate impacts the performance of machine on execution.

(or)

2. a)Explain in detail about Adders.
   b)What are the significance of PLDs.

Unit-2

3. Explain with relevant examples branching. Sub routine calls and returns operations.

(or)

4. Define Addressing Mode and explain the various addressing mode with suitable example and diagram.

Unit-3

5. Explain the interface on I/O devices with neat diagram.

(or)

6. What is bus interface on I/O? Explain the synchronous and asynchronous mode of data transfers.

Unit-4

7. What is mapping function? Explain the cache memory mapping techniques.

(or)

8. a) Explain the booth algorithm for signed operand multiplication.
   b) Design carry look ahead adder and explain its function

Unit-5

9. Explain the instruction execution and hardware organization of 4 stage pipeline with its hazards.

(or)

10. explain the basic organization of a micro programmed control unit with neat diagram.

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PART – A

Answer any five of the following questions   (5x5=25)

1. What are combinational logic and sequential circuits? How do they differ?
2. Explain about load and store.
3. simplify the function and implement with $f(A,B,C,D)=\sum(0,2,3,5,6,7,15)$
4. What is a register transfer language?
5. What is cache memory and virtual memory?
6. Write the flow chart for multiplication of a positive number.
7. Write a short note on optical memory.
8. Write a short note on pipelining.
9. What is programmed I/O?
10. With a neat diagram explain hardwired control unit implementation.

PART – B

Answer any one full question from each unit   (5x15=75)

Unit-1

1. a) what is a flip flop? Explain the types of flip flops?
   b) Distinguish between multiprocessors and multicomputer.

(or)

2. a) What is a multiplexer and explain the types of a multiplexer.
   b) Explain about decoders and shift registers and draw with a neat diagram ?

Unit-2

3. What is memory address and locations ? Explain about byte addresibility with a neat diagram.

(or)

4. Discuss about the instruction sequencing process.

Unit-3

5. a)with neat sketches explain various methods for handling multiple interrupt requests.
   b)Define an interrupt and also define various types of interrupts.

(or)

6. a)Explain the working principles of DMA with a neat diagram
   b)discuss about memory mapped I/O.

Unit-4

7. Explain the synchronous and asynchronous DRAM with the aid of a block diagram..

(or)

8. Briefly explain the various types of a semiconductor memory

Unit-5

9. Explain in detail micro programmed control unit implementation

(or)

10. a)Briefly explain the operation of a superscalar processor.
    b)explain the bus organization of a data path with a neat diagram