Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 2

Total No. of Questions : 09

MCA (Sem.–3)
COMPUTER SYSTEM ARCHITECTURE
Subject Code : MCA-301
Paper ID : [B0111]

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTION TO CANDIDATES :
1. SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students has to attempt any ONE question from each SECTION.
2. SECTION-E is COMPULSORY carrying TWENTY marks in all.
3. Use of non-programmable **scientific calculator** is allowed.

SECTION-A

1. (a) Explain the JK master slave flip-flop.

   (b) Explain the action of multiplexer and demultiplexer with suitable diagrams.

2. (a) Explain counters in detail.

   (b) Design the 8-Bit full adder Circuit.

SECTION-B

3. Design the Arithmetic Circuit of a processor with truth table.

4. Explain in detail the different types of instructions that are supported in a typical processor.

SECTION-C

5. Differentiate between Micro programmed and Hardwired control Unit.

6. a) Discuss the data transfer mechanism of the PCI bus.

   b) Outline some specific properties of RISC system.

SECTION-D

7. a) Explain the Cache memory.

   b) Explain Virtual memory.

8. a) Explain the associative memory with a block diagram.

   b) Discuss the various mapping schemes used in cache design. Compare the schemes in terms of cost and performance.

SECTION-E

9. Write short notes on :

   a) Explain the Types of Interrupts.

   b) What are Decoders? Explain.

   c) Differentiate between Static & Dynamic RAM.

   d) Name the various Addressing Modes.

   e) Discuss the Importance of Virtual memory.

   f) Explain the Constituents of an Instruction Cycle.

   g) Explain Bus Interfaces.

   h) What is race around condition?

   i) Why the interrupt masks provided in any processor ?

   j) What are Demultiplexers?