MCA (Sem. - 3rd)
COMPUTER SYSTEM ARCHITECTURE
SUBJECT CODE : MCA - 301(N2)
Paper ID : [B0111]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours   www. allsubjectsbyou. com   Maximum Marks : 60

Instruction to Candidates:

1) Attempt any one question from each Sections **A, B, C,** and **D.**
2) Section - E is **Compulsory.**
3) Use of Non-programmable **Scientific Calculator** is allowed.

Section - A

(1 × 10 = 10)

Q1) (a) Explain with a logic diagram, the working of a full-adder.

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

Q2) (a) Explain in detail about serial in serial out shift register.

   (b) Design a 4-bit binary adder/subtractor circuit.

Section - B

(1 × 10 = 10)

Q3) Explain in detail the different types of instructions that are supported in a typical processor.

Q4) What are the various types of computer registers? Describe the control logic design with sequence register and decoder.

Section - C

(1 × 10 = 10)

Q5) Explain in detail the working of a micro programmed control unit.

Q6) (a) Discuss the data transfer mechanism of the PCI bus.

   (b) Outline some specific properties of RISC systems.

Section - D

(1 × 10 = 10)

Q7) What are the various types of ROM? Discuss the methods of programming ROMs.

Q8) Discuss the various mapping schemes used in cache design. Compare the schemes in terms of cost and performance.

Section - E

(10 × 2 = 20)

Q9)

a) What is an XNOR gate? Draw its truth table.

b) What is the difference between latch and flip flop?

c) What are Demultiplexers?

d) What are opcode and operand? Give examples.

e) What is the function performed by timing and control unit in a microprocessor?

f) What is an instruction execution cycle?

g) What is the purpose of guard bits used in floating point operations?

h) Give the function of memory address and memory buffer registers.

i) Why are interrupt masks provided in any processor?

j) Give the features of a RAM cell.

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