53 (CS 301) COAR

2018

COMPUTER ORGANIZATION & ARCHITECTURE

Paper : CS 301

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Describe basic functional units of a computer. 10

   (b) Write the use of the following registers : 2×5=10

   (i) MAR

   (ii) MDR

   (iii) PC

   (iv) IR

   (v) General Purpose Registers.

2. *(a)* Describe following basic microoperations : 2×5=10

   (i) Addition

   (ii) Subtraction

   (iii) Increment

   (iv) Decrement

   (v) Shift

   (b) Show one stage of Arithmetic Logic Shift unit. 10

3. What are various addressing modes ? Describe. 2×10=20

4. *(a)* What is virtual memory ? With the help of suitable diagram, show virtual address translation method. 2+8=10

   (b) Explain signed magnitude representation and two's complements representation of a number. Consider suitable example. 5+5=10

5. *(a)* What is Cache Memory ? Explain 'locality of reference' phenomenon. 10

(b) Using suitable diagram, explain Associated mapping of Cache Memory and Main Memory. 10

6. Explain the use of the following : 5×4=20

(i) I/O Mapping

(ii) DMA

(iii) Interrupt

(iv) Bus Arbitration

(v) Serial Port.

7. Write short notes on : 4×5=20

(a) Cache Coherence Problem

(b) RISC

(c) Instruction Pipelining

(d) RAID.
