NEW

2017

BCA

2nd Semester Examination

COMPUTER ORGANZATION & ARCHITECTURE

PAPER—1201

Full Marks : 100

Time : 3 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer Q. No. *1* and any *four* from the rest.

1. Answer any *five* questions : 5×2

(a) What is the difference between computer architecture and organization ?

(b) What is Von Neumann bottleneck ?

(c) What is the function of stack pointer ?

(d) Distinguish combinational and sequential circuit.

(e) State distributive law of Boolean Algebra.

(f) What is virtual memory ?

(g) What is DMA ?

2. (a) Explain Booth's algorithm using a flowchart.

(b) Multiply—6 with 7 using the Booth's algorithm.

(c) What is the advantage of Booth's algorithm. 3+6+6

3. (a) Compare serial and parallel adder.

(b) Design and explain a 4-bit carry look-ahead adder.

(c) Draw a logic circuit that performs four logic operations of XOR, XNOR, NOR and NAND. 3+6+6

4. (a) What is the difference between SRAM and DRAM ?

(b) Explain memory hierarchy with diagram.

(c) Explain associative mapping with example.

(d) What are the merits and demerits of associative mapping. 3+4+5+3

5. (a) What is instruction format ?

(b) Evalute the arithmetic statement

$$X = (A + B) - (C + D)$$

Using one-address and zero-address instruction.

(c) What is addressing mode ? What are the advantages of having different addressing modes ?

(d) Explain implied and stock addressing mode.

5+4+6

6. (a) Explain with diagram, the functioning of Hardware control unit.

(b) (i) What is instruction pipelining ?

(ii) What are the advantages of pipelining ?

(c) What are the functions of following registers ?

(i) PC, (ii) SP, (iii) MAR, (iv) MDR, (v) IR

6+(2+2)+5

7. Write short notes (any *three*) : 3×5

(a) Sequential circuit;

(b) Main Memory ;

(c) ALU ;

(d) Fixed point number representation ;

(e) Micro instruction.

[Internal Assessment — 30]