

2017

MCA

2nd Semester Examination

COMPUTER ARCHITECTURE AND ORGANIZATION

PAPER—MCA-203

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 five from the rest.

1. Answer any *five* questions : 5×2
- (a) What is an opeode? How many bits are needed to specify 32 distinct operations?
 - (b) What are the different bases in a CPU?
 - (c) What are the characteristics of SRAM?

(Turn Over)

- (d) What is cycle stealing?
 - (e) State the meaning of locality of reference.
 - (f) Define the term overflow and underflow.
 - (g) What do you mean by hardwired control?
2. (a) How data transfer can be controlled using handshaking technique?
- (b) How floating point number is organised in a computer system. 8+4
3. (a) Define addressing mode and explain the basic addressing modes with an example of each.
- (b) What are the components of R/O interface? 10+2
4. (a) Draw necessary diagram and explain the control signal generation using microprogrammed control.
- (b) Given as example of zero-address, one-address, two-address and three-address instructions. 8+4
5. (a) Explain the Booth's algorithm for multiplication of signed two's complement numbers.
- (b) State the difference between CISC and RISC. 8+4
6. (a) Briefly explain with the block diagram of the DMA transfer is a computer system.

- (b) Give the comparison between memory mapped R/O and R/O mapped R/O.

What is an interrupt?

8+4

7. (a) How program interrupt works in a programmed control transfer.
- (b) A digital computer has a common bus system for 16 registers of 32 bits each. The bus is constructed with multiplexers :
- (i) How many selection inputs are there in each multiplexer?
 - (ii) What size of multiplexers are needed?
 - (iii) How many multiplexers are there in the bus?
- (2+7)+3
8. Discuss the different mapping techniques used in cache memories and their relative merits and demerits. 12

[Internal Assessment — 30 marks]
