



WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 1st Semester Examination, 2018

CMSACOR02T-COMPUTER SCIENCE (CC2)

COMPUTER SYSTEM ARCHITECTURE

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.*

Answer Question No. 1 and any *four* questions from the rest

1. Answer any *four* questions from the following: 2×4 = 8
 - (a) What is a normalized binary number?
 - (b) What do you mean by opcode?
 - (c) What is a micro-operation?
 - (d) How floating point representation is defined in IEEE standard 754?
 - (e) What is Register Direct Addressing mode?
 - (f) What is the role of ORG assembler directive?
 - (g) Describe the function of program counter.

2. (a) Draw a flowchart of Booth's Algorithm for two's complement multiplication and give an example. (3+2)+3
 (b) What is the difference between two's complement of a number and two's complement representation of a number?

3. (a) What is pipelined architecture? Compare it with parallel architecture. (3+3)+2
(b) Realise a X-OR gate with four 2-input NAND gates only (Show only the diagram).

4. (a) Explain the purpose of ISZ instruction (Increment and Skip if Zero). 4
 (b) What do you mean by locality of reference? 2
 (c) What is associative memory? 2

5. (a) Design and explain 4 bit magnitude comparator circuit with suitable diagram. 4+4
(b) Design a 4 bit binary ripple counter with J.K. flip-flop.

6. (a) Draw a diagram of a bus system with four registers with three bits each, using three-state buffers and a decoder. 6
(b) "ROM is a type of RAM" — Justify. 2
7. (a) What do you mean by addressing mode? 2
(b) Briefly explain the following addressing modes: 2×3
(i) Immediate mode
(ii) Register indirect mode
(iii) Indirect address mode.
8. (a) Derive the logic and draw the logic diagram of a 1-bit comparator circuit. 6
(b) What is indeterminate state in SR flip-flop? 2

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