No. of Printed Pages : 4

Sl. No.

C0-R4.B4 : COMPUTER SYSTEM ARCHITECTURE

DURATION : 03 Hours **MAXIMUM MARKS : 100**

Roll No. : | | | | | | |

Answer Sheet No. : | | | | | | |

Name of Candidate : _____ **; Signature of Candidate :** _____

INSTRUCTIONS FOR CANDIDATES :

- Carefully read the instructions given on Question Paper, Answer Sheet.
- Question Paper is in English language. Candidate has to answer in English Language only.
- **Question paper contains Seven questions. The Question No. 1 is compulsory. Attempt any FOUR Questions from Question No. 2 to 7.**
- **Parts of the same question should be answered together and in the same sequence.**
- **Questions are** to be answered in the **ANSWER SHEET** only, supplied with the Question Paper.
- **Candidate cannot leave the examination hall/ room without signing on the attendance sheet and handing over his/her Answer Sheet to the Invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
- After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question Booklet is complete in all respects.

DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

1. (a) What is Memory Address Mapping ? Briefly discuss.
(b) How RISC is different from CISC ?
(c) Briefly discuss Synchronous Serial Transfer.
(d) What do you understand by Line Print Terminal ?
(e) What is the Interrupt Service Routine ?
(f) Differentiate between Serial and Parallel Ports.
(g) Differentiate between Synchronous and Asynchronous Data Transfer. **(7x4)**

2. (a) Explain the Working of a Parallel Adder/ Subtractor Circuit.
(b) Write an assembly language (8085) program to find the multiplication to two 8-bit numbers. Assume that the first and second 8-bit numbers are stored at memory location 2000H and 2001H respectively. And the 16-bit result will be stored at memory locations 2002H (lower byte) and 2003H (higher byte). **(8+10)**

3. (a) Convert the following Infix expression to a Postfix expression, clearly showing the Steps involved.
5* (((9 + 8) + (4 * 6)) − 7)
(b) Consider you have an L1 data cache, L2 cache, and main memory. The hit rates and hit times for each are given as :

50% hit rate, 2 cycles hit time to L1.
80% hit rate, 15 cycles hit time to L2.
100% hit rate, 200 cycles hit time to main memory.

(i) What fraction of accesses are serviced from L2 and Main Memory ?
(ii) What is the miss rate and miss time for the L2 cache ? **(8+10)**

4. (a) Derive and explain an algorithm to Divide two Binary numbers.
(b) Explain the Working of a Ripple Adder Circuit. **(9+9)**

5. (a) Explain the terms "Programmed I/O" and "Interrupt-Initiated I/O" with reference to Computer Architecture design. Also, mention the fundamental differences between them.
(b) What is Priority Interrupt ? Explain the working of the Priority Interrupt Signals. **(9+9)**

6. (a) What are the uses of Basic Computer Instructions ? Also, mention the issues that may arise in basic computer instructions.
(b) Compare and contrast between pipelining systems and non-pipelining systems. **(10+8)**

7. Write short notes on any three :
(a) Different types of BUS.
(b) Differences between SISD and SIMD architectures.
(c) Program Control Instructions and their types.
(d) Difference between Centralised and Distributed Systems. **(6+6+6)**

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SPACE FOR ROUGH WORK

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