No. of Printed Pages : **2**

Sl. No.

C0-R4.B4 : COMPUTER SYSTEM ARCHITECTURE

NOTE :

1. **Answer question 1 and any FOUR questions from 2 to 7.**
2. **Parts of the same question should be answered together and in the same sequence.**

Time : 3 Hours **Total Marks : 100**

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1. (a) How do you find the complement of a number ?

(b) What is pipeline processing ? List out the conflicts in instruction pipeline and explain each one of them in brief.

(c) Define Cache Memory and Main Memory. What are its advantages and disadvantages ?

(d) What is the various types of addressing modes ? Brief out each.

(e) How DMA improves I/O operation efficiency ?

(f) What is the difference between a microprocessor and a microprogram ? Is it possible to design a microprocessor without a microprogram ?

(g) Differentiate between SISD and MIMD architectures. **(7x4)**

2. (a) Explain Flynn's classification of computer architecture.

(b) Draw and explain Four-segment CPU Pipeline. **(9+9)**

3. (a) What are the steps required for a pipelinened processor to process the instruction ?

(b) DMA stands for Direct Memory Access. What are the modes of operation of data transfer using DMA ? Explain each.

(c) Discuss the essential goals of CISC and RISC architecture? Describe the major characteristics of CISC and RISC processors. **(4+4+10)**

4. (a) Give an example to illustrate zero-address, one-address and two-address instructions.

(b) Explain the basic Von-Neumann Machine cycle. How timing and control are provided by hardwired control unit ? **(8+10)**

5. (a) What are the basic differences between a branch instruction, a call subroutine instruction, and program interrupt ?

(b) What is the difference between isolated I/O and memory-mapped I/O ? What are the advantages and disadvantages of each ? **(9+9)**

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6. (a) Explain booth multiplication algorithms to multiply two binary integers. Also discuss its hardware implementation.

(b) What is Register Transfer Language ? Explain it with the help of an example.

(c) Explain the working of a parallel Adder/ Subtractor Circuit. **(10+4+4)**

7. (a) What is the basic advantage of using interrupt-initiated data transfer over transfer under program control without an interrupt ?

(b) Explain virtual memory technique.

(c) Differentiate between machine language and assembly language with appropriate example. **(8+5+5)**

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