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**KAMALA INSTITUTE OF TECHNOLOGY & SCIENCE, SINGAPUR**  
**23CS28PC304**

II.B. Tech. I. Semester Supplementary Examinations, June-2025

**COMPUTER ORGANIZATION AND ARCHITECTURE**

(Common to CSE & AIML)

**Time: 3 Hours**

**Max.Marks:60**

Note: Question paper consists of Part-A & Part-B.

i) **Part-A** for 10M, ii) **Part-B** for 50marks

- **Part A** is compulsory, consists of 10 sub questions from all units carrying equal marks.
- **Part-B** consists of **10 questions** (numbered from 2 to 11) carrying **10marks** each. From each unit there are 2 questions and the students should answer one of them. Hence the student should answer **5 questions** from **Part-B**.

| PART-A (10Marks) |                                                                                                           |       |     |
|------------------|-----------------------------------------------------------------------------------------------------------|-------|-----|
| Q. No            | Questions                                                                                                 | Marks | BTL |
| 1.a)             | What is meant by an instruction?                                                                          | 1     | 1   |
| 1.b)             | Name the functionalities of CPU?                                                                          | 1     | 1   |
| 1.c)             | Explain is control memory?                                                                                | 1     | 1   |
| 1.d)             | List the different addressing modes?                                                                      | 1     | 1   |
| 1.e)             | Give an example of decimal representation?                                                                | 1     | 1   |
| 1.f)             | Explain how floating-point number is represented?                                                         | 1     | 1   |
| 1.g)             | Discuss associate memory? What is its need?                                                               | 1     | 1   |
| 1.h)             | Define DMA?                                                                                               | 1     | 1   |
| 1.i)             | What are the conditions of incoherence?                                                                   | 1     | 1   |
| 1.j)             | What are CISC characteristics?                                                                            | 1     | 1   |
| PART-B (50Marks) |                                                                                                           |       |     |
| Q. No            | Questions                                                                                                 | Marks | BTL |
| 2. a)            | Explain in detail about computer design and architecture                                                  | 5M    | 2   |
| b)               | Illustrate shift micro-operations in detail                                                               | 5M    | 2   |
| OR               |                                                                                                           |       |     |
| 3. a)            | Explain the phases of Interrupt Cycle with a neat flow chart                                              | 5M    | 2   |
| b)               | Explain register transfer language. Show how to achieve Register Transfer with examples and block diagram | 5M    | 3   |
| 4. a)            | Discuss the various types of instruction formats                                                          | 5M    | 4   |
| b)               | Define control memory. Explain                                                                            | 5M    | 2   |
| OR               |                                                                                                           |       |     |
| 5. a)            | What are shift instructions? Explain with suitable examples                                               | 5M    | 2   |
| b)               | Summarize micro program control                                                                           | 5M    | 2   |
| 6. a)            | Analyze fixed point representation in detail                                                              | 5M    | 4   |
| b)               | Explain decimal arithmetic operations with examples                                                       | 5M    | 2   |
| OR               |                                                                                                           |       |     |
| 7. a)            | Discus about division algorithms with examples                                                            | 5M    | 4   |
| b)               | Explain the Booth's algorithm for signed multiplication                                                   | 5M    | 2   |

|              |                                                            |           |          |
|--------------|------------------------------------------------------------|-----------|----------|
| <b>8. a)</b> | List the various modes of transfer? Explain                | <b>5M</b> | <b>2</b> |
| <b>b)</b>    | Compare cache memory and main memory                       | <b>5M</b> | <b>4</b> |
| <b>OR</b>    |                                                            |           |          |
| <b>9. a)</b> | Explain the working process of DMA                         | <b>5M</b> | <b>2</b> |
| <b>b)</b>    | What is an I/O interface and explain it with block diagram | <b>5M</b> | <b>2</b> |
| <b>10.a)</b> | Explain about instruction pipelining with an example       | <b>5M</b> | <b>3</b> |
| <b>b)</b>    | Discuss the characteristics of multi processors            | <b>5M</b> | <b>4</b> |
| <b>OR</b>    |                                                            |           |          |
| <b>11.a)</b> | Explain inter-processor communication and synchronization  | <b>5M</b> | <b>2</b> |
| <b>b)</b>    | Explain about arithmetic pipelining                        | <b>5M</b> | <b>2</b> |

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