

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fourth Semester B.Tech Degree (S,FE) Examination June 2022 (2015 scheme)

**Course Code: CS202****Course Name: COMPUTER ORGANISATION AND ARCHITECTURE (CS, IT)**

Max. Marks: 100

Duration: 3 Hours

PART A*Answer all questions, each carries 3 marks*

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|---|---|---|
| 1 | List and explain the steps involved in the execution of a complete instruction
ADD R2,(R3) | 3 |
| 2 | Write the register transfer sequence for storing a word in memory. | 3 |
| 3 | Discuss about floating point representation | 3 |
| 4 | Differentiate the Little Endian and the Big Endian Addressing schemes | 3 |

PART B*Answer any two questions, each carries 9 marks*

- | | | |
|---|---|---|
| 5 | What is mean by an addressing mode? Describe any four most common addressing modes with examples | 9 |
| 6 | a) What do you understand by stack organisation? Draw the block diagram of a memory stack and explain the basic PUSH and POP operations. Discuss about stack organization of memory | 4 |
| | b) Show the Hardware for Sequential circuit multiplier & explain its working | 5 |
| 7 | Explain Circuit arrangement for restoring division algorithms with suitable Example | 9 |

PART C*Answer all question, each carries 3 marks*

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|----|--|---|
| 8 | Different steps in interrupt service routine | 3 |
| 9 | What are the components of an I/O interface? | 3 |
| 10 | Write about memory hierarchy in a computer system. | 3 |
| 11 | Classify different types of ROM | 3 |

PART D*Answer any two questions, each carries 9 marks*

- | | | |
|----|--|---|
| 12 | a) With a neat sketch explain the working principle of DMA | 5 |
| | b) Differentiate Static and Dynamic memory | 4 |
| 13 | a) Write an elaborated note on PCI, SCSI and USB bus standards | 6 |
| | b) Explain about structure of an SDRAM | 3 |

- 14 a) Explain the various mapping function that can be applied on cache memory in details 6
- b) What is meant by bus arbitration 3

PART E*Answer any four questions, each carries 10 marks*

- 15 a) Explain the design of status register 6
- b) Discuss about control unit organization 4
- 16 a) what are the types of microoperations in digital system 5
- b) Explain about micro programmed control unit 5
- 17 a) Any two methods of Control organization 6
- b) Design a Combinational circuits that select and generates following logic functions listed below 4

Operation
NOT
AND
OR
NAND
X-NOR
NOR
X-OR

- 18 a) Compare Horizontal vs vertical microinstructions 5
- b) Design an arithmetic circuit with one selection variable S and two n-bit data inputs A and B. The circuit generates the following four arithmetic operations in conjunction with the input carry Cin. Draw the logic diagram for the first two stages. 5

S	Cin =0	Cin =1
1	D = A + B (add)	D = A + 1 (increment)
0	D = A - 1 (decrement)	D = A + B + 1 (subtract)

- 19 Discuss about processor unit with control variables. Define control word and micro operation performed for $R1 \leftarrow R2 + R3$ 10
- 20 Write the functions of micro programmed sequencer 10
