Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

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

Course Code: EC206

Course Name: COMPUTER ORGANISATION (EC)

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks Marks

1 a) Design a 16 bit carry look ahead(CLA) adder using 4 bit CLA block. Explain the CLA working with necessary diagrams and delay equations. (9)

b) Explain the terms Register set and Memory of MIPS Processor (6)

2 a) Explain the working of a N bit ALU to perform addition, subtraction, AND and OR operation using a neat diagram. (9)

b) Write short note about floating point number systems and IEEE 754 standard. (6)

3 a) Explain about MIPS instruction formats R, I and J-type with examples. (9)

b) Translate the following MIPS instruction to machine language format. Registers $s0 to $s7 are represented by numbers 16_{10} to 23_{10}.Opcode values are 0_{10} for both **add** and **sub** instructions. Function values are 32 for **add** and 34 for **sub** instructions. (6)

(i) add $s0,$s1,$s2 (ii) sub $s4,$s5,$s0

PART B

Answer any two full questions, each carries 15 marks

4 a) Explain the MIPS addressing modes with examples. (10)

b) Using a neat sketch explain MIPS memory map. (5)

5 a) Discuss in detail about different types of exceptions and pseudo instructions. (8)

b) Explain the state elements of MIPS processor. (7)

6 a) Draw and explain the datapath and control path of single cycle MIPS processor using a R type instruction. (10)

b) Explain the weaknesses of single cycle processor. How multi cycle processor address these weaknesses. (5)

PART C

Answer any two full questions, each carries 20 marks

7	a)	Differentiate program controlled I/O and interrupt controlled I/O.	(8)
	b)	Briefly explain Direct memory access (DMA).	(6)
	c)	Write short notes on ROM and EPROM.	(6)
8	a)	Describe the read and write operations of SRAM and DRAM cell.	(10)
	b)	Explain Segmentation of Virtual Memory.	(5)
	c)	Explain the replacement algorithms used in Cache memory	(5)
9	a)	Discuss the direct mapping method of Cache memory.	(7)
	b)	Explain the address translation process using page table.	(8)
	c)	Explain the various write protocols used in cache memory.	(5)

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