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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FOURTH SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019

Course Code: CS202

Course Name: COMPUTER ORGANISATION AND ARCHITECTURE

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks

1		Give the relevance of MAR, PC and IR in a typical computer system with neat diagram.	3
2		Differentiate between Big-endian and Little-endian assignment for word addressing.	3
3		Illustrate the advantages of using multiple bus organization over single bus organization with the help of a sample instruction execution.	3
4		Divide 25 by 8 using restoring division algorithm.	3

PART B

Answer any two questions, each carries 9 marks

5	a)	Define Addressing mode and explain Different types of addressing modes with an example for each.	6
	b)	Show the effect of stack operations on the stack with diagram.	3
6	a)	What is meant by instruction sequencing? Discuss the different types of instruction sequencing with example.	4
	b)	Illustrate Booth multiplication with an example	5
7	a)	Discuss the data path inside the processor with single bus organization with neat diagram	4
	b)	Write down the control sequence for the execution of the instruction *Add (R1), R2* in single bus organization	5

PART C

Answer all question, each carries 3 marks

8		Discuss the different ways of accessing I/O devices of a computer system.	3
9		Explain the daisy chain method with neat diagram	3
10		Justify the need of memory hierarchy in a computer and discuss the various parameters that are considered for the formation of memory hierarchy.	3
11		Discuss about different types of RAMs.	3

PART D

Answer any two questions, each carries 9 marks

12 a) What is interrupt? Discuss the differences between subroutine and interrupt service routine. 4

b) Describe the different bus arbitration techniques for DMA data transfer. 5

13 a) Explain semiconductor ROM memories 4

b) Discuss the SCSI protocol for a complete disk read operation by listing out the sequence of events involved in it. 5

14 a) How do you relate set associative mapped cache with Direct mapped and associative mapped cache mechanisms? 3

b) Design a 64K x 8 memory module using 16K x 1 static memory chips. 6

PART E

Answer any four questions, each carries 10 marks

15 a) Write short notes on Arithmetic , logic and shift microoperations with examples 6

b) Show the block diagram that executes the following conditional control statements

$C' T_2 : F \leftarrow A$

$C T_2 : F \leftarrow B$ where C is the conditional variable and A, B , F are registers 4

16 Draw the block diagram of a processor unit with 16 selection variables and discuss the functions of selection variables. Derive the control word for the micro operation $R1 \leftarrow R1 - R2$. 10

17 Discuss the major operations that can be performed by a parallel adder in the design of arithmetic circuit. 10

18 Discuss the different methods of control logic design in detail 10

19 Describe the organization of micro program sequencer with neat diagram. Also provide its address sequencing capabilities. 10

20 Explain the horizontal and vertical microinstructions in microprogrammed control. 10

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