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BMS College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

December 2017 Semester End Main Examinations

Course: Computer Organization and Architecture **Duration: 3 hrs**
Course Code: 15CS3DCCOA **Max Marks: 100**
Date:21.12.2017

Instructions: **Answer any FIVE full questions, choosing one from each Unit.**

UNIT 1

1.	a)	Define is performance measurement? Explain the overall SPEC rating for the computer in a program suite.	04
	b)	Mention four types of operations to be performed by instructions in a computer. Explain with basic types of instruction formats to carry out C ← [A] + [B]	08
	c)	Explain with necessary block diagram the basic functional units of a computer.	08

UNIT 2

2.	a)	Three devices A, B & C are connected to the bus of a computer. I/O transfers for all 3 devices use interrupt control. Interrupt nesting for devices A & B is not allowed, but interrupt- request from C may be accepted while either A or B is being serviced. Suggest different ways in which this can be accomplished in each of the following. a) The computer has one interrupt– request line. b) Two interrupt request lines INTR1 and INTR2 are available with INTR1 having higher priority. Specify when and how interrupts are enabled and disabled in each case.	06
	b)	Analyze different approaches to bus arbitration with neat diagram.	08
	c)	Analyze and explain architecture and protocols with respect to USB.	06

UNIT 3

3.	a)	Design and explain the working of 16 Megabits DRAM chip configured as 2M x 8. Also explain how it can be made work in fast page mode.	10
	b)	Analyze and explain different memory performance considerations.	10

OR

4.	a)	Briefly explain any two cache mapping functions.	06
	b)	With a neat diagram, explain translation of virtual address into physical address.	09
	c)	Show with diagram the memory hierarchy with respect to speed, size and cost.	05

UNIT 4

5.	a)	Perform signed multiplication of numbers -12 and -11 using Booth's algorithm.	08
	b)	Given A=10101 and B=00100, perform A/B using restoring division algorithm.	08
	c)	Discuss special values with respect to IEEE floating point numbers.	04

UNIT 5

6.	a)	Draw and explain multiple bus organization. Explain its advantages.	10
	b)	Write the control sequence for execution of an unconditional branch instruction and explain.	10

OR

7.	a)	Explain different approaches used in multithreading.	10
	b)	Discuss with a neat diagram, shared memory multiprocessors.	10

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