103 / SE103CS - Computer Organization & Architecture

P. Pages : 2

Time : Three Hours

GUG/W/23/13803

Max. Marks : 80

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Notes : 1. All questions are compulsory.
2. All questions carry equal marks.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Illustrate your answers wherever necessary with the help of neat sketches.
6. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.

1.	a)	Draw and explain the single bus structure and discuss it's advantages and disadvantages?	**6**
	b)	Draw and explain John Von Neumann architecture?	**7**
	c)	What do you mean by distributed computing?	**3**

OR

2.	a)	Explain, how nested subroutine call is implemented using processor stack?	**8**
	b)	State the advantages of having auto increment and auto decrement addressing modes in assembly language instruction set?	**8**
3.	a)	Draw and explain the uniform and non-uniform memory access multiprocessor system?	**6**
	b)	Draw and explain Flinn's classification for processor?	**6**
	c)	Explain the execution of complete instruction with diagram?	**4**

OR

4.	a)	Write a short note on array processors?	**6**
	b)	Draw and explain single bus interconnection network?	**6**
	c)	Explain RISC processor in details?	**4**
5.	a)	Draw and explain the block diagram of a microprogrammed control unit?	**6**
	b)	State the attributes of vertical and horizontal instruction formats?	**6**
	c)	How instruction can pre-fetched? Explain with program counter?	**4**

OR

6.	a)	What is emulator? Write down the application of emulators?	**6**
	b)	How sequencing can takes placed in micro-programmed?	**6**
	c)	What are the application of grouping of instruction in micro-programmed?	**4**
7.	a)	Give Booth's algorithm for multiplication of two binary numbers. Also draw the necessary circuit arrangement?	**6**
	b)	Design a carry look ahead adder?	**7**
	c)	Explain advantages of bit-pair multiplication?	**3**

OR

8.	a)	Perform the operation using restoring integer division algorithm 8/3.	**5**
	b)	Explain why non-restoring integer division method is better than restoring integer division method?	**6**
	c)	Give double precision IEEE floating point format?	**5**
9.	a)	Write a short note on multiple module memory system?	**6**
	b)	Find the page hit and page fault ratio for the given page address stream using i) Least recently used ii) Optimal iii) First in first out page replacement algorithm. Assume three page buffers. Page address stream 7, 8, 7, 6, 10, 7, 9, 10, 8, 7, 10, 7. ?	**7**
	c)	What is the advantages of virtual memory?	**3**

OR

10.	a)	Consider a cache consisting of 128 blocks of 08 words reach and main memory of 32 K words. Explain the various mapping functions with reference to the above stated cache?	**7**
	b)	Draw and explain the internal structure of a cache?	**6**
	c)	Differentiate between RAM and ROM?	**3**

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