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10CS46

Fourth Semester B.E. Degree Examination, June/July 2018
Computer Organization

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. What is stored program concept? Explain the functional units of a stored program digital computer, along with a block diagram. **(09 Marks)**

b. Write the basic performance equation. Explain the role of each of the parameters in the equation on the performance of the computer. **(05 Marks)**

c. Convert the following pairs of singed decimal numbers to 5-bit 2's complement numbers and add them. State whether over flow occurs or not :
i) –5 and 7 ii) –3 and –8 iii) –10 and –13. **(06 Marks)**

2 a. What is an addressing mode? Explain register, indirect and index addressing modes with an example for each. **(08 Marks)**

b. What is subroutine linkage? Explain with an example, subroutine linkage using linkage register. **(07 Marks)**

c. Register R1 and R2 of computer contain the decimal valve 1200 and 4600. What is the effective address of the source operand in each of the following instructions?

i)	Load	20(R1), R5
ii)	Move	#3000, R5
iii)	Store	R5, 30(R1, R2)
iv)	Add	– (R2), R5
v)	Subtract	$(R1)^+$, R5

(05 Marks)

3 a. What is an interrupt? Explain polling and vectored interrupts with their advantages and disadvantages. **(08 Marks)**

b. What is DMA? What are its advantages? With the supporting diagram, explain different registers on a DMA interface. **(06 Marks)**

c. With a block diagram explain bus arbitration using daisy chain. **(06 Marks)**

4 a. With a neat sketch, explain the individual input and output interface circuits. Also elicit their salient features. **(10 Marks)**

b. With a help of data transfer signals explain how a read operation is performed using PCI bus. **(10 Marks)**

PART – B

5 a. Draw the organization of a 1K × 1 memory cell and explain its working. **(08 Marks)**

b. Explain any two cache mapping functions. **(08 Marks)**

c. Write a short note on virtual memory organization. **(04 Marks)**

6 a. Explain Booth's algorithm, multiply –13 and +11 using Booth's multiplication. **(10 Marks)**

b. Explain the IEEE standard for floating point number representation. **(10 Marks)**

7 a. Using single bus organization, write the control sequence to execute the instruction Add(R3), R1. **(07 Marks)**

b. With a neat diagram explain the hardwired control unit. **(08 Marks)**

c. Write a short note on micro-programmed control unit. **(05 Marks)**

8 a. With an example explain Amdhal's law. **(07 Marks)**

b. Explain the classification of parallel processing proposed by Flynn. **(08 Marks)**

c. Write a note on hardware multithreading. **(05 Marks)**

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