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CS/IT - 402 BE

IV Semester Examination, June 2015

Computer System Organization

Time: Three Hours Maximum Marks: 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each questions are to be attempted at one place.

iii) A11 questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numerical, Derivation, Design and Drawing etc.

UNIT- I

1. a) If the content of address bus is 0101 and the content of data is 1100 and read write signal is 1 (set), Then what do you understand by this information?

b) Convert the following numbers with the indicated bases to decimal.

i) $(12121)_3$ ii) $(4310)5$

c) Explain, what do you understand by instruction cycle, Explain with the help of flowchart?

d) Explain common bus system architecture with the help of diagram.

OR

Write down different types of registers used by CPU, also explain the general register organization with the help of diagram. www.rgpvonline.com

UNIT-II

2. a) Design the half adder with the help of its truth table.

b) If we are working with 8-bit computer, then what will be the size of integer that can be stored in computer in binary form.

c) What is microinstruction format? Explain different field of microinstruction.

d) What do you understand by micro programmed control? Explain the block diagram of micro programmed control organization.

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OR

The memory unit of a computer has 256 k words of 32 bit each. The computer has an instruction format with 4 fields. An operation field a mode field to specify one of seven addressing modes, a register address field to specify one of 60 processor registers and a memory address. Specify the instruction format and the number of bits in each field if the instruction is in one memory word.

UNIT-III

3. a) Write down different modes of data transfer?

b)Why does DMA have priority over the CPU when both request a memory transfer?

c) What is the basic advantage of using interrupt initiated data transfer over transfer under program control without an interrupt?

d) What do you understand by program interrupt? Draw the flowchart for interrupt cycle?

OR

What is difference between isolated Input and Output and memory mapped Input and Output. Write different advantages and disadvantages of each.

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UNIT-IV

4. a) Draw the memory hierarchy?

b) Point out the difference between direct mapping technique and associated mapping technique, with the help of example.

c) An address space is specified by 16 bits and the corresponding memory space by 8 bits.

i) How many words are there in the address space?

ii) How many words are there in the memory space?

d) Explain the concept of virtual memory with the help of example.

OR

A digital computer has a memory unit of 64k* 16 and a cache memory of Ik words. The caches uses direct mapping with a block size of four words :

i) How many bits are there in the tag, index, block and word field of address format.

ii) How many bits are there in each word of cache and how are they divided into function? Include a valid bit. www.rgpvonline.com

iii) How many blocks can the cache accommodate?

UNIT-V

5. a) What do you understand by arithmetic pipeline?

b) Point out the difference between synchronous bus and asynchronous bus.

c) Write down different characteristics on multiprocessor.

d) What is cache coherence and why is it important in shared memory multiprocessor system? How can this problem be resolved with snoopy cache controller?

OR

What do you understand by inter processor communication? Explain with the help of example.