Reg. No.



INTERNATIONAL CENTRE FOR APPLIED SCIENCES (Manipal University) IV SEMESTER B.S. DEGREE EXAMINATION – NOV. / DEC. 2016 SUBJECT: COMPUTER ARCHITECTURE (CS 242) BRANCH: COMP SCIENCE / COMP ENGG) Saturday, 3 December 2016

Time: 3 Hours	Max. Marks: 100
✓ Answer any FIVE FULL Questions.	

- 1A. Explain any two techniques used to improve the microprocessor speed.
- 1B. Explain the two approaches to handle multiple interrupts with suitable example.
- 1C. Design a 32K X 16 RAM and 16K X 16 ROM using 8K X 8 RAM chips and 8K X 8 ROM chips. Assume an active high chip select signal for both RAM and ROM chips. Show the memory address map and memory connection to the CPU for this system.

(4+6+10)

(10+10)

- 2A. With neat diagram explain any five RAID levels
- 2B.i) Explain magnetic disk multiple platters with a neat diagram
 - ii) With necessary diagram explain how a virtual address is mapped to a physical address using paging
- 3A. Briefly explain the general instruction format of Pentium machines.
- 3B. How does the instruction length affect the memory and CPU in a computer system?
- 3C. Write a note on Call/Return instructions of Pentium machine.

(10+5+5)

- 4A. Explain Booth's algorithm for 2's complement multiplication with a neat flow chart and multiply (+8) x (-5) using this algorithm.
- 4B. Explain the user visible register with example.

(10+10)

- 5A. Discuss any two sequencing techniques involved in the design of micro instructions.
- 5B. Explain 32 bit IEEE floating point format. Represent the following in this format.
 i. 2.6875
 ii. -1/1
 - (10+10)

- 6A. Explain asynchronous data transfer using handshaking
- 6B.i) Explain write policies of cache memory
 - ii) Perform the following operations using 2's complement representation. Select enough bits to avoid overflow.
 - a) (-2) (-5)b) (-2) + (-7)c) (+3) + (+7)d) (-5) - (-7)e) (+6) - (-7)(10+10)
- 7A. Explain DMA controller with a neat block diagram
- 7B. Explain cache coherence problem with an example. Give two possible solutions for the same.

(10+10)

- 8A. Write short notes on:
 - i. Serial arbitration procedure
 - ii. Multiport memory
 - iii. SISD
 - iv. MIMD

(5 x 4)

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