Reg. No.



## INTERNATIONAL CENTRE FOR APPLIED SCIENCES (Manipal University) IV SEMESTER B.S. DEGREE EXAMINATION –MAY 2016 SUBJECT: COMPUTER ARCHITECTURE (CS 242) (BRANCH: COMP SCIENCE /COMP ENGG) 27<sup>TH</sup> MAY, 2016

## Time: 3 Hours ✓ Answer ANY FIVE full Questions.

- 1A. With neat diagram explain the Instruction cycle state diagram
- 1B. Explain Set associative mapping with neat diagram and write its advantages and disadvantages.

(10+10=20marks)

Max. Marks: 100

- 2A. List and explain the key characteristics of a computer memory system.
- 2B i) With necessary diagram explain how a virtual address is mapped to a physical address using paging.
  - ii) Consider an address space of 16MB. The memory space is specified by 20 bits. If the page no. field of the virtual address is 10 bits, find the following:
    - i) No. of bits needed to specify the address space
    - ii) Size of the memory space
    - iii) Size of a page
    - iv) No. of pages
    - v) No. of blocks

(10+(5+5)=20 marks)

- 3A.i) What do you mean by addressing mode?
  - ii) Explain the following addressing modes with figuresa) Stack b) Register c) Displacement d) Indirect
- 3B. Write short notes on the following:
  - i) Pentium address translation with diagram
  - ii) Power PC addressing modes with diagram

(2+(2x4)+(5+5)=20marks)

4A. Write and explain micro operations for interrupt cycle and fetch cycle by making use of data flow and sequence of events with necessary figures.

4B. Distinguish between hardwired and micro-programmed control unit. Explain the functioning of micro programmed control unit with a neat figure.

(10+10=20 marks)

- 5A. Explain Isolated and Memory mapped I/O.
- 5B. With neat diagram explain single and two address field sequencing technique in the case of microinstructions

(10+10=20 marks)

- 6A. Draw the block diagram of an I/O interface unit and explain its operation.
- 6B. Explain the strobe control method of asynchronous data transfer.

(10+10=20 marks)

- 7A. Compare RISC and CISC machines. Explain delayed load in RISC pipeline with example.
- 7B.i) Represent the following in 32-bit IEEE 754 floating point format. i. 23.5 ii. -384
  - ii) Explain DMA controller with a neat block diagram.

(10+(4+6)=20 marks)

- 8A. Write short notes on the following:
  - i. SIMD
  - ii. MIMD
  - iii. Daisy-Chain priority interrupt
  - iv. Multiplication of floating point numbers

 $(5 \times 4=20 \text{ marks})$ 

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