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B.Tech. Degree IV Semester Supplementary Examination ***April 2022***

CS 15-1403 COMPUTER ARCHITECTURE AND ORGANIZATION
(2015 Scheme)

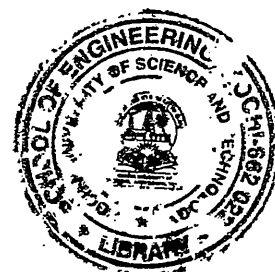
Time: 3 Hours

Maximum Marks: 60

PART A
(Answer *ALL* questions)

(10 × 2 = 20)

- I. (a) Differentiate between Big-Endian and Little-Endian Assignments with an example.
- (b) List out the various steps needed to execute the machine instruction LOAD R2, LOC.
- (c) Write notes on Program-Controlled I/O.
- (d) What do you mean by prefetching of microinstructions?
- (e) Define emulation.
- (f) Explain the concept of fast addition.
- (g) What is translation lookahead buffer? What are the advantages?
- (h) Differentiate between SRAM and DRAM.
- (i) What are exceptions? List out any two types of exceptions.
- (j) What is the difference between a subroutine and an interrupt-service routine?



PART B

(4 × 10 = 40)

- II. (a) Define stack. Explain with an example the sequence of operations in a stack when a subroutine is encountered. (6)
 - (b) Differentiate between Register Transfer Notation and Assembly-Language Notation. (4)
- OR**
- III. (a) What are addressing modes? Explain any two addressing modes with an examples. (6)
 - (b) Differentiate between CISC and RISC architectures with their advantages. (4)
 - IV. (a) Explain the functioning of a microprogrammed control unit with necessary diagrams. (6)
 - (b) Explain the steps in fetching and executing the instruction ADD R3, R4, R5. (4)
- OR**
- V. (a) Design a 4 bit fast adder with look ahead carry. (5)
 - (b) Explain the principle of non-restoring division with an example. (5)
 - VI. (a) What is the concept of cache memory? Explain any two cache memory mapping functions. (5)
 - (b) Explain how address translation is done in paging. (5)
- OR**
- VII. (a) Explain the internal organization of a 16 x 8 memory chip. (5)
 - (b) What is the need for page replacement? Explain any two page replacement algorithms. (5)
 - VIII. (a) Explain any two methods of handling simultaneous interrupt requests by devices. (5)
 - (b) Explain briefly about the PCI bus standard. (5)
- OR**
- IX. (a) What are vectored interrupts? How are they handled by the processor? (5)
 - (b) What is DMA? Explain the functioning of DMA controller. (5)