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ECS401

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0110 Roll No.

B. Tech.

(SEM. IV) THEORY EXAMINATION 2011-12

COMPUTER ORGANIZATION

Time : 3 Hours *Total Marks : 100*

Note :— (1) Attempt ***all*** questions.

(2) All questions carry equal marks.

1. Attempt any ***four*** parts of the following :—

(a) What is overflow ? Discuss the differences among positive overflow, exponent overflow and significand overflow.

(b) Represent the following decimal numbers in IEEE standard floating point format :—

(i) – 1.75

(ii) 21

(c) Discuss the generations of computer system.

(d) What is memory transfer ? What are different registers associated for memory transfer ? Discuss.

(e) What is the benefit of using a multiple bus architecture compared to a single bus architecture ?

(f) Discuss the bus arbitration.

(a) Explain the Booth's multiplication method and use this method to multiply decimal numbers – 23 and 9. Discuss the advantages of using this method.

(b) Write short notes on the following :—

(i) direct addressing

(ii) displacement addressing.

(c) Discuss the advantages and disadvantages of using a variable length instruction format.

(d) What is CISC ? Explain its characteristics.

(e) What is the stack organization ? Compare register stack and memory stack.

(f) Assuming that all registers initially contain O, what is the value of R_1 after the following instruction sequence is executed :—

MOV R_1, # 6

MOV R_2, # 5

ADD R_3, R_1, R_1

SUB R_1, R_3, R_2

MULT R_3, R_1, R_1.

3. Attempt any *two* parts of the following :—

(a) Explain what is meant by a hardwired implementation of a control unit.

(b) Explain the different cycles of an instruction execution.

(i) Micro operation

(ii) Micro instruction

(iii) Micro program

(iv) Micro code.

4. Attempt any *two* parts of the following :—

(a) Explain the function of arithmetic circuit with the help of circuit diagram.

(b) Why is memory system of a computer organized as a hierarchy ? Discuss the basic elements of a memory hierarchy.

(c) What is meant by cache mapping ? What are different types of mapping ? Discuss different mapping techniques with examples.

5. Attempt any *two* parts :—

(a) Define interrupt. When a device interrupt occurs how does the processor determine which device has issued the interrupt ?

(b) When a DMA module takes control of a bus and while it retains control of the bus, what does the processor do ?

(c) List and define three techniques for performing I/O job.