

(3Hrs)

Max Marks: 80

- NB: 1. Question No.1 Compulsory.  
2. Solve any THREE from Q.2 to Q.6  
3. Assume suitable data whenever necessary with justification.

Q1. Answer any four questions

- (A) Explain Instruction and Instruction Cycle. (05)
- (B) Explain Booths algorithm with an example (05)
- (C) Give different instruction formats. (05)
- (D) Describe the memory hierarchy in the computer system (05)
- (E) Explain Superscalar Architecture. (05)

- Q2. (A) Explain Branch Predication Logic and delayed branch. (10)
- (B) List and explain various data dependencies, data and branch hazards that occur in the computer system. (10)

- Q3. (A) A program having 10 instructions (without Branch and Call instructions) is executed on non-pipeline and pipeline processors. All instructions are of same length and having 4 pipeline stages and time required to each stage is 1nsec. (10)
- i) Calculate time required to execute the program on Non-pipeline and Pipeline processor.
- ii) Calculate Speedup
- (B) What is Microprogram? Write microprogram for following operations. (10)
- i) ADD R1, M, Register R1 and Memory location M are added and result store at Register R1.
- ii) MUL R1, R2 Register R1 and Register R2 are multiplied and result store at Register R1.

- Q4. (A) Explain Bus Contention and different method to resolve it. (10)
- (B) Describe memory segmentation in detail. Explain how address translation is performed in virtual memory. (10)

- Q5. (A) State the various types of data transfer techniques. Explain DMA in detail. (10)
- (B) Consider a cache memory of 16 words. Each block consists of 4 words. Size of the main memory is 256 bytes. Draw associative mapping and calculate TAG, and WORD size. (10)

- Q6. (A) Write short note on Performance measures (10)
- (B) Draw and explain floating point addition subtraction algorithm. (10)

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