Indian Institute of Engineering Science and Technology, Shibpur
B.Tech (IT) 6th Semester Mid Term Examination, March 2022
IT3204: High-Performance Computer Architecture

Full Marks: 30 Time: 45 Minutes

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1. Answer any TEN of the following. (3 marks each)
    a. "The program execution in a computer involves performing instructions cycles, which includes two types of activities". What are those?
    b. What are the two basic strategies used to improve the performance of a computer?
    c. What are the major differences between instruction-level parallelism and processor-level parallelism?
    d. How can you classify parallelism according to Flynn?
    e. Is an MISD system practically feasible? If yes, give an example. If no, justify the reason.
    f. What is the basic difference between scalar and vector processors? Explain.
    g. What is an MFU? How does it help superscalar processing?
    h. What is the difference between an instruction pipeline and an arithmetic pipeline?
    i. What do you mean by pipeline efficiency? Explain.
    j. Name different pipeline hazards and their primary sources.
    k. What is chaining used in vector processors? Explain.
    l. What is the effect of the branch instruction in a pipeline? State with a diagram.
    m. What are the primary aspects a computer architect should consider before finalizing an instruction set?
    n. What are the major drawbacks of a CISC computer?
    o. What is the 'KISS' principle? Where is it used? How effective is it?
    p. Give two examples of each of CISC and RISC CPUs.
    q. What is the difference between multitasking and multiprocessing? Explain.
    r. How does main memory interleaving increase the performance of a computer? Explain.
    s. What kinds of interrupts are the following?
        i. Data transfer
        ii. INT instruction
        iii. Error in CPU hardware
        iv. Overflow
        v. Illegal opcode
        vi. End of I/O
    t. What is DMA? State with a neat diagram.

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