Subject code: PC404EC Semester: 2nd

Subject name: Computer Organisation & Architecture ACY: 2021-2022

Assignment Questions

1. Elaborate on the significance of fixed-point representation of numbers in computer systems. Provide examples to support your explanation. [CO1]
2. Describe the digital arithmetic algorithm for multiplication using Booth's algorithm. Provide a step-by-step walkthrough of the process. [CO1]
3. Discuss the algorithms for addition and subtraction in the context of digital arithmetic and their importance in computer systems. [CO1]
4. Provide an overview of computer instructions, highlighting their types and functions. How do computer instructions contribute to the execution of programs? [CO2]
5. Explain the components and steps involved in the instruction cycle, focusing on the Fetch and Decode stages. How does the instruction cycle contribute to the execution of instructions? [CO2]
6. Discuss the configuration and instructions related to input, output, and interrupts in computer systems. How do interrupts enhance the functionality of a computer system, and what is the role of program interrupt in this context? [CO2]
7. Elaborate on the stack organization in computer systems. How is it used for data storage and retrieval, and what role does it play in program control? [CO3]
8. Discuss the basics of vector processing and array processors. How do these concepts contribute to efficient data manipulation in parallel processing environments? [CO3]
9. Explain the concept of pipeline processing, focusing on instruction pipelines. How does pipelining enhance the speed and efficiency of instruction execution in a CPU? [CO3]
10. Discuss the various modes of data transfer, including programmed I/O, interrupt-driven I/O, and priority interrupt. How do these modes enhance the efficiency of input/output operations in a computer system? [CO4]
11. Explore the concept of Direct Memory Access (DMA) and its role in data transfer. What is the function of a DMA controller, and how does it optimize the transfer of data between external devices and memory? [CO4]
12. Define an Input-Output Processor (IOP) and elaborate on the communication between the CPU and IOP. How does the I/O channel contribute to efficient data transfer and processing? [CO4]
13. Describe the concept of virtual memory and its role in addressing memory limitations. How is address mapping achieved using pages in virtual memory systems? [CO5]
14. Explain the fundamentals of associative memory and its use in computer systems. How does associative memory contribute to fast data retrieval? [CO5]
15. Discuss the importance of memory management in computer systems. What are the key challenges associated with memory management, and how are they addressed in modern computing environments? [CO5]