SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY :: PUTTUR
(AUTONOMOUS)
Siddharth Nagar, Narayanavanam Road – 517583
QUESTION BANK (DESCRIPTIVE)

Subject with Code : (19CS0504) Computer Organization and Architecture
Course & Branch : B.Tech – CSE
Year & Sem : II-B.Tech I-Sem **Regulation : R19**

UNIT – I
BASIC STRUCTURE OF COMPUTERS

1. Draw the basic functional unit of computer and explain each unit in detail. [L3,CO1][12M]
2. a) Discuss about Bus structure with neat sketch? [L2, CO1] [8M]
   b) Write briefly about types of Bus? [L3, CO1] [4M]
3. a) Narrate the Instruction Cycle with neat diagram? [L4, CO1] [6M]
   b) Write in detail about the Basic Operational Concepts with neat diagram ? [L4, CO1] [6M]
4. a) Describe various steps of instruction cycle? [L2, CO1] [4M]
   b) List out the Computer Instructions and Explain about it. [L3, CO1] [8M]
5. Describe the Addressing Modes with neat sketch? [L4, CO1] [12M]
6. Write in detail about Data Manipulation Instructions and their types . [L3, CO1] [12M]
7. a) Discuss about Program counter and Memory Address register? [L2, CO1] [4M]
   b) Explain in detail about Data Transfer Instructions? [L2, CO1] [8M]
8. Discuss briefly about Program Control Instructions? [L2, CO1] [12M]
9. Illustrate any four addressing modes with neat sketch. [L4, CO1] [12M]
10. a) Explain in detail about I/O unit and memory Unit? [L3, CO1] [4M]
    b) Write short notes on basic I/O operations? [L3, CO1] [8M]

UNIT – II
DATA REPRESENTATION & COMPUTER ARITHMETIC

1. Draw the Flowchart and Algorithm for Add/Sub with an example. [L3,CO2][12M]
2. Show the steps of signed operand multiplication with example? [L2, CO2] [12M]
3. Draw the flowchart for Multiplication of positive numbers and steps with an example. [L3 ,CO2] [12M]
4. a) Write about signed number, 1's complement, 2's complement with an example?[L3,CO2][4M]
   b) Describe about fixed and floating point representations. [L2,CO2][8M]

5. Give the steps in Booth multiplication algorithm and Draw the flowchart with an example? [L3,CO2][12M]
6. What are the steps of Division restoring and draw the flow chart with an example. [L3,CO2][12M]
7. Draw the Flowchart and write algorithm for Division non-restoring with an example. [L3,CO2] [12M]
8. Describe the Floating point numbers, its operations and implementation . [L2,CO2][12M]
9. Explain about signed number and fixed point representations. [L2,CO2][12M]
10. Show the step by step signed-operand multiplication process using Booth algorithm when (-9) and (-13) are multiplied. Assume 5-bit registers to hold signed numbers and (-9) to be the multiplicand. [L3,CO2][12M]

UNIT – III

REGISTER TRANSFER & MICRO OPERATIONS

1. a) Show that the block diagram of the hardware that implements the following register transfer statement P: R2←R1. [L2,CO3][8M]
   b) Explain the way of constructing a 4-line common bus system with a neat diagram. [L4,CO3][4M]
2. a) Narrate the three- state bus buffers with neat sketch. [L4,CO3][6M]
   b) Write about binary increment with neat sketch. [L4,CO3][6M]
3. a) Describe about 4-bit incrementar with suitable example? [L2,CO3][4M]
   b) What is Hardwired Control? Explain in detail with a neat diagram. [L4,CO3][8M]
4. Define register transfer language? Explain in detail. [L2,CO3][12M]
5. Describe the Micro Programmed Control with a neat sketch. [L2,CO3][12M]
6. State about Address Sequencing with neat diagram? [L4,CO3][12M]
7. a) Write about Bus transfer with neat diagram. [L3,CO3][6M]
   b) Summarize the Register Representations and way it is used. [L5,CO3][6M]
8. Explain in detail about Arithmetic Micro Operations? [L3,CO3][12M]
9. Write in detail about Logic Micro Operations with neat representations? [L3,CO3][12M]
10. Explain shift micro operations and draw 4 bit combinational circuit shifter. [L4,CO3][12M]

UNIT – IV

MEMORY ORGANIZATION

1. a) Explain briefly about Memory Hierarchy with neat sketch? [L4,CO4][8M]
   b) Discuss briefly about synchronous DRAMs? [L2,CO4][4M]
2. What is Main Memory and what are the types in it, Explain in detail. [L2,CO4][12M]

3. Describe the semiconductor RAM and its types in detail? [L3,CO4][12M]
4. Write briefly about ROM and its types? [L2,CO4][12M]
5. a) Define track and sector? What is the importance of auxiliary memory? [L2,CO4][6M]
   b) Discuss various types of Auxiliary memory. [L2,CO4][6M]
6. a) Explain about hit and miss in the memory? [L2,CO4][4M]
   b) Define Cache Memory? Explain in detail its mapping functions. [L3,CO4][8M]
7. What is Virtual Memory? Discuss how paging helps in implementing virtual memory. [L3,CO4][12M]
8. Describe the use of DMA controllers in a computer system with a neat block diagram. [L4,CO4][12M]
9. Give detailed notes on DMA controllers and transfers with neat sketch. [L4,CO4][12M]
10. a) Differentiate between RAM & ROM? [L4,CO4][6M]
    b) Distinguish between SRAM & DRAM? [L4,CO4][6M]

UNIT –V

PIPELINIG & PARALLEL PROCESSORS

1. Categorize and discuss various forms of parallel processing based on Flynn's taxonomy with a neat sketch. [L4,CO5][12M]
2. a) Describe the concept of Pipelining with clear example. [L2,CO5] [8M]
   b) Explain about characteristics of Multiprocessor? [L3,CO5][4M]
3. a) Draw and explain arithmetic pipeline for floating point multiplication. [L4,CO5][6M]
   b) Illustrate the instruction pipeline with neat timing diagram. [L4,CO5][6M]
4. Define the hazards? Explain in detail about instruction hazards? [L3,CO5][12M]
5. Describe the Interconnection Structures in detail. [L3, CO5][12M]
6. a) Draw 8×8 omega switching network with explanation? [L2,CO5][6M]
   b) Explain crossbar switch with neat sketch? [L3,CO5][6M]
7. a) Draw multistage network and explain with neat sketch? [L2,CO5 [6M]
   b) Write about hyper cube network with neat sketch? [L2,CO5][6M]
8. a) List out the conflicts in pipelining and explain about it [L2,CO5][6M]
   b) Explain about 4-segment Instruction Pipeline with neat diagram [L3,CO5][6M]
9. Illustrate three possible ways of implementing a multiprocessor system with neat sketch. [L3,CO5][12M]
10. Elaborate the cache coherency. [L4,CO5][12M]