

Question Bank ESE

- **Note: A 10 mark question can be divided into two 5 marks questions and a 5 marks questions can be divided into sub questions.**
- **Prioritize key points when addressing questions that ask for differences.**
- **Make judgment of what to write and how much to write according to the marks in a given question.**
- **Adjust the depth and length of your explanation based on the marks assigned to the question.**
- **Focus on delivering concise, relevant information for lower-mark questions and more detailed, comprehensive answers for higher-mark questions.**
- **Modules can be divided as Q1- 1,4,5 & Q2- 2,6,3 & Q3-1,3,4 and Q4- 2,6,5 in a question**
- **Or it can be divided as Q1- 1,3,4 & Q2- 2,5,6 & Q3-1,2,5 and Q4- 3,4,6 in a question**
- **Or it can be divided as Q1- 1,2,3 & Q2- 4,5,6 & Q3-1,2,3 and Q4- 4,5,6 in a question**

5 Marks

Module_1

1. Explain Von Neumann's architecture in detail.
2. State the difference between Computer organization and architecture.
3. A computer system has a clock frequency of 2.8 GHz, and it executes a program XYZ with 18,000 instructions. The design has an average Cycles per Instruction (CPI) of 10. Calculate the CPU time required to execute the program XYZ.
4. Explain the three metrics of Performance measure of computer Architecture?
5. Briefly explain the evolution of Computers.
6. Program ABCD, which has 15000 instructions, is executed on a system whose clock frequency is 3.3Ghz. The design facilitates an average Cycle per instruction of 12. Calculate the CPU time utilized to execute Program ABCD.

7. Explain the Instruction Set for the 8086 Microprocessor.

Module_2

1. Illustrate the 6-stage Pipelining and Explain in detail.
2. Describe Flynn's Classification in detail.
3. Explain the Basic Instruction Cycle with Interrupt Processing with proper diagram.
4. State the difference between Soft wired and Hardwired Control units.

Module_3

Note in place of x any no ie. 1 to 9 or A to E will be given accordingly .

1. Convert the $(xx.x)_8$ to binary, hexadecimal and decimal Numbers.
2. Convert $(xx.x)_{10}$ to binary and octal numbers.
3. Convert $(xxx.xx)_8$ to decimal, binary, and hexadecimal.
4. Convert the following:
 - i) $(xxx.xx)_{16}$ to Octal.
 - ii) $(xxx)_{10}$ to Binary and Hexadecimal.
 - iii) $(xxx.xx)_{16}$ to binary.

Thoroughly go through all conversion methods.

5. Draw the flowchart for the Restoring division method, and explain the steps.
6. Draw a flowchart of Booth's algorithm.

Module_4

1. Compare Primary memory and Secondary memory.
2. Draw and explain the memory hierarchy in detail.
3. Design the memory hierarchy and explain the characteristics.
4. Explain Direct Mapping In cache Memory mapping technique.
5. Explain Memory Hierarchy Design and its Characteristics in details.
6. Mention the Need for Cache, And Explain Cache HIT and MISS with a proper diagram.

Module_5

1. Difference between Programmed and DMA I/O data transfer.
2. Explain the concept of the Direct memory access technique (DMA).
3. Compare between Programmed and Interrupt Driven I/O data transfer.
4. Describe with the help of a neat diagram I/O Module Structure.

Module_6

1. Implement embedded C program to Transfer a block of data from one memory location to another memory location.
2. Implement embedded C program to perform addition of two 16 bit Number (8051 Microcontroller)

3. Implement an embedded C program for 8051 to transfer the letter "A" serially at 9600 baud continuously. Use 8-bit data and 1-stop bit.
4. Difference between Microcontroller and Microprocessor.

10Marks

Module_1

1. Draw and explain the Architecture of the 8086 microprocessor
2. Explain various addressing modes of the 8086 Microprocessor with examples.
3. Briefly explain the features of the 8086 microprocessor.
4. Draw the Flag Register of 8086 Microprocessors and explain all flags.
5. Describe any 5 Addressing Mode of 8086 Microprocessor.
6. Draw and explain the Architecture of the 8086 microprocessor
7. Explain the Von Neumann Architecture in detail, and list down the performance measure of Computer Architecture.

Module_2

1. Explain the block diagram of the Basic Instruction Cycle with Interrupt Processing and also explain the state diagram for it.
2. Explain six-stage instruction pipelines.
3. Explain the basic instruction cycle with a neat diagram.
4. Classify and explain the computers according to the type of Parallelism (Flynn's Taxonomy).
5. Mention the Advantages, Disadvantages, and Uses of Flynn Taxonomy.
6. Explain Flynn's Classification and describe the Six-stage Pipelining in the processor.
7. Give a brief overview on the straight-line sequencing of instruction in 8086 Microprocessor

Module_3

1. Multiply (5) and (10) using Booth's Algorithm and draw and explain the flowchart for Booth's algorithm.
2. Draw a flowchart of Booth's algorithm.
3. Explain Digital Circuits: NOT, AND, OR, NAND, NOR, EX-OR, EX-NOR Gates
4. Implement the truth table for AND, NAND OR, and XOR Gate with logic diagram.
5. Represent the number $(-125)_{10}$ in single and double-precision IEEE754 binary floating-point representation formats.
6. Represent the number $(156)_{10}$ in single and double-precision IEEE754 binary floating-point representation formats.
7. Represent the number $(105)_{10}$ in single and double-precision IEEE754 binary floating-point representation formats.
8. Explain the booths algorithm flowchart and Multiply (7) and (5) using Booth's Algorithm.
9. Explain the booths algorithm flowchart and Multiply (5) and (3) using Booth's Algorithm.

Module_4

1. Explain the Direct Memory mapping technique in cache memory detail and explain the cache memory concept with a 3-level diagram.
2. Define cache memory. Explain cache organization in detail with diagram.
3. Explain the classification of primary memory in a computer system. Your answer should cover the following all the subcategories Also Mention its characteristics Advantages and Disadvantages.
4. Explain the Direct Memory mapping technique in cache memory detail.

Module_5

1. Explain DMA-based data transfer technique for I/O devices with a neat diagram.
2. Explain the Organisation of an I/O module.
3. Discuss the Interrupt driven I/O and Programmed I/O.
4. Draw the working diagram of the DMA controller and discuss the working of DMA.
5. Difference between Programmed and Interrupt-driven I/O data transfer techniques and explain DMA

Module_6

1. Explain the pin diagram of the 8051 microcontroller. State the Features of the 8051 Microcontroller.
2. Draw and explain the block diagram of the 8051 Microcontroller.
3. Differentiate between Microcontroller and Microprocessor.
4. Explain the pin diagram of the 8051 Microcontroller with a suitable pin diagram.
5. Draw the block diagram of the 8051 microcontroller.
6. Draw and explain the block diagram of the 8051 Microcontroller.
7. Implement embedded C program to perform addition of two 16-bit Number(8051 Microcontroller).
8. Implement an embedded C program that blinks an LED connected to pin P1.0 in 8051.
9. Write a C program for 8051 to transfer the letter "A" serially at 9600 baud continuously. Use 8-bit data and 1-stop bit.
10. 6. Implement an embedded C program to load a number into the Accumulator.
11. 7. Write a program to load three numbers into the Accumulator and send them to port 1.
12. 8. Write an 8051 C program to send values 00 – FF to port P1.
13. Explain the PSW register.

All the BEST SY