

- Q.2** a. What are the main four components of any general purpose computer? Describe briefly.

Answer:

In a stored program computer, programs are represented in a form suitable for storing in memory alongside the data. The computer gets its instructions by reading them from memory, and a program can be set or altered by setting the values of a portion of memory. A main memory, which stores both data and instructions: an arithmetic and logic unit (ALU) capable of operating on binary data; a control unit, which interprets the instructions in memory and causes them to be executed; and input and output (I/O) equipment operated by the control unit.

- b. Differentiate between:
(i) Input unit and Output unit
(ii) Third generation & Fourth generation computers

Answer: Page Number 04-06, 20-21 of Text Book

- Q.3** a. Explain various addressing modes with example of each.

Answer: Page Number 48 of Text Book

- b. What is a queue? Explain the various operations on queue.

Answer: Page Number 68 of Text Book

- Q.4** a. Summarize the sequence of events involved in handling an interrupt request from a single device.

Answer: Page Number 233 of Text Book

- b. What do you mean by Bus Arbitration? Discuss two approaches to bus arbitration: Centralized and Distributed.

Answer: Page Number 237-239 of Text Book

- Q.5** a. Explain how PCI bus operates.

Answer: Page Number 261 of Text Book

- b. What is I/O interface and port? Write functions of an I/O interface.

Answer: Page Number 248 of Text Book

- Q.6** a. Explain briefly SRAM and DRAM. Mention the differences between these.

Answer: Page Number 146-148 of Text Book

- b. Why RAM traditionally have been organized as only one bit per chip where as ROM are organized with multiple chips per bit?

Answer:

The 1-bit-per-chip organization has several advantages. It requires fewer pins on the package (only one data out line); therefore, a higher density of bits can be achieved for a given size package. Also, it is somewhat more reliable because it has only one output

driver. These benefits have led to the traditional use of 1-bit-perchip for RAM. In most cases, ROMs are much smaller than RAMs and it is often possible to get an entire ROM on one or two chips if a multiple-bits-per-chip organization is used. This saves on cost and is sufficient reason to adopt that organization.

Q.7 a. Write a short note on virtual memory.

Answer: Page Number 267-269 of Text Book

b. What are differences among positive overflow, exponent overflow and significant overflow? Explain using suitable example.

Answer: Page Number 319 of Text Book

Q.8 a. Write and explain non-restoring division algorithm using a suitable example.

Answer: Page Number 383 of Text Book

b. Explain two techniques for speeding up the multiplication operation.

Answer: Page Number 392-393 of Text Book

Q.9 a. Differentiate between Hard-wired controlled and Microprogrammed controlled microinstructions.

Answer: Page Number 425, 429 of Text Book

b. Consider the following instructions:

Add (R3), R1

What sequence of elementary operations are required to execute this instruction? Explain.

Answer: Page Number 433 of Text Book

Text Book

Computer Organization, Carl Hamacher, Zvonko Vranesic, Safwat Zaky, 5th Edition, TMH, 2002