Bus Structures

MODULE TEST

You may wish to review the exercises or audio-visual material before taking this module test. Once you begin the test, do not refer to the course materials.

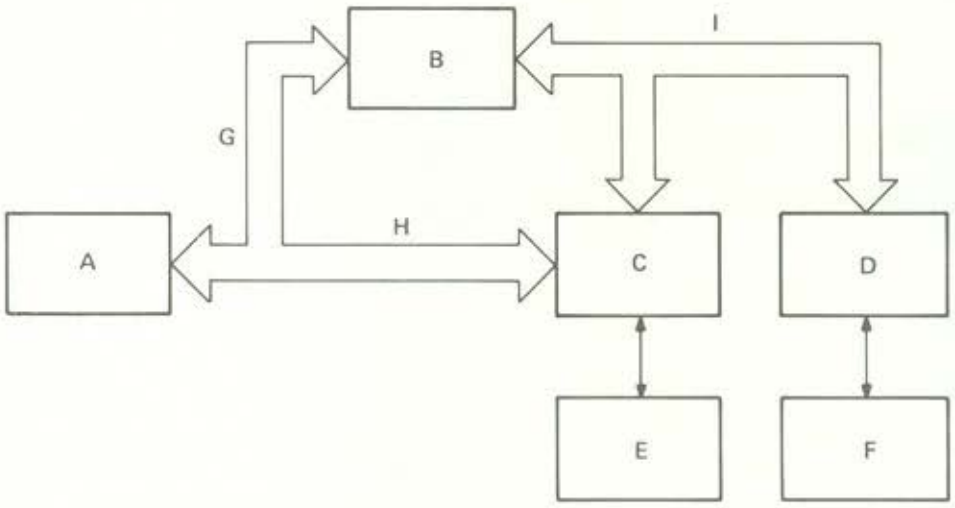
There are six questions.

1. For each statement below, write a T in the space provided if the statement correctly describes a bus structure. Write an F in the space provided if the statement does not correctly describe a bus structure.

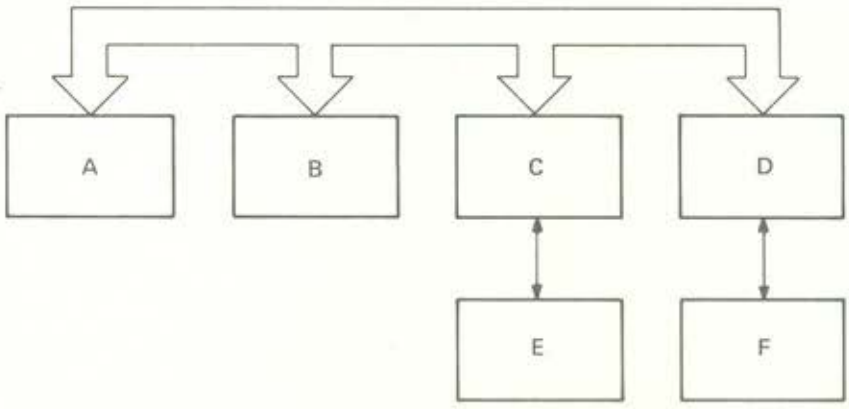
A Bus Structure. . .	**T or F**
is a cable containing a bundle of wires.	____
is a group of cables each containing a single transmission wire.	____
provides communication paths between the CPU, main memory, and peripheral devices.	____
can transmit any combination of addresses and data on each of its wires.	____
can pass information about data, control signals, and addresses.	____
includes address, data, and control lines.	____

2. Block diagrams of single-bus and 3-bus configurations are given below. A list of components and bus types is also given. Match each component with its position in the diagrams by writing the correct letter in the space provided. Also, match each *bus type* in the 3-bus configuration by writing the correct letter in the space provided.

a. 3-Bus Configuration



b. Single-Bus Configuration



I. **3-Bus Configuration**

Components	**Position in Diagram**
Disk Interface	____
Terminal	____
CPU	____
Terminal Interface	____
Moving Head Disk	____
Main Memory	____
Bus Types	
DMA	____
I/O	____
Memory	____

II. **Single-Bus Configuration**

Components	**Position in Diagram**
Disk Interface	____
Moving Head Disk	____
CPU	____
Terminal Interface	____
Main Memory	____
Terminal	____

3. For each statement, indicate whether it refers to a single-bus (SB) or 3-bus (3B) configuration by writing the correct abbreviation in the blank space.

Statement	Bus Type
More versatile data flow.	____
Larger maximum memory size.	____
More potential for throughput if multi-ported memory is used.	____
Fewer machine instructions for programmer to remember.	____

4. Indicate whether each of the statements below provides true or false information about DMA by writing either T or F in the space provided.

DMA.	T or F
means "data and memory access."	____
means "direct memory addressing."	____
means "direct memory access."	____
refers to busses, interfaces, and devices.	____
refers to busses only.	____
moves information to and from main memory via the CPU.	____
moves information to and from main memory without passing through CPU.	____

5. You are given the binary digits 110101. The pulse (⎍⎍) represents a 1, while no pulse (–) represents a 0. Draw both the serial transmission diagram and the parallel transmission diagram for these digits.

   a. Serial Transmission

   b. Parallel Transmission

6. The six functions of a typical interface and their descriptions are given below. Match each function with its description.

Function	Description
Control	____
Buffer	____
Status	____
Conversion	____
Housekeeping	____
Program Interrupt	____

Descriptions

a. Performs specialized functions, such as updating a byte counter or current address register.

b. Monitors the operational situation of the peripheral and stores the information as data. This data, such as READY and ERROR, can be acted on when the CPU is temporarily halted.

c. Serves as a compensator for differences in the speeds of peripherals and the rest of the computer system.

d. Governs the operation of the peripheral based on command information supplied by the software.

e. Performs required data changes (e.g., serial to parallel) so that data can be transferred between the peripheral and CPU correctly.

f. Halts a CPU whenever a peripheral requires some type of action from the software.