

Fig 2.44: Independent requests method

**LIST OF QUESTIONS
PART A**

1. What are the two modes in which 8086 operates?

- 8086 operates in two modes
3. Minimum mode and
 4. Maximum mode.

2. Explain the difference between minimum mode and maximum mode of operation.

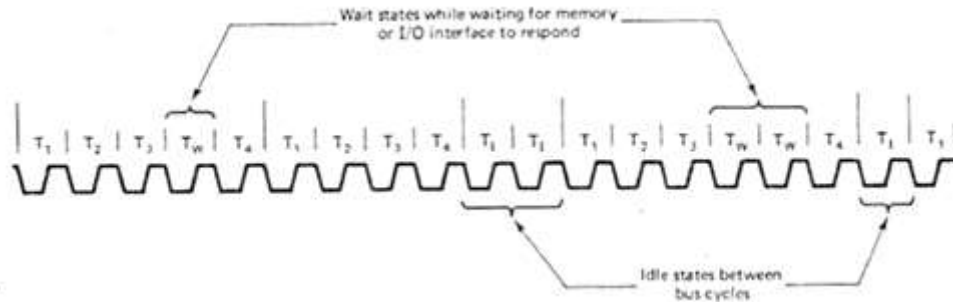
Minimum mode	Maximum mode
1. When 8086 is operating in minimum mode the pin MN/MX will be connected to VCC	When 8086 is operating under maximum mode the pin MN/MX will be connected to GND.
2. It is used in single processor environment	It is used in multi processor environment

3. State the functions of queue status lines QS0 and QS1 in 8086 microprocessor.

QS1	QS0	Function
0	0	Queue is in idle state
0	1	First byte of opcode has entered into the queue
1	0	Queue empty
1	1	Subsequent byte of opcode has entered into the queue

4. Define idle cycle and wait state.

If the bus is to be inactive after the completion of a bus cycle, then the gap between successive cycles is filled with idle state clock cycles represented by T_1 . Wait states are inserted between T_3 and T_4 when a memory or I/O interface is not able to respond quickly enough during a transfer.

**5. What are the three principal types of IO programming?**

The three principal types of I/O are:

1. Programmed I/O
2. Interrupt I/O
3. Block transfers.

6. What are the ways in which the data can be transferred to or from the port?

The transfer of data to or from a port can be done in two ways.

1. To execute an instruction that causes a single byte or word to be transferred
2. To execute a sequence of instructions that causes a special system component associated with the interface to transfer a sequence of bytes or words to or from a pre designated block of memory locations.

7. What is meant by bus cycle?

The activity involved in transferring a byte or word over the system bus is called a bus cycle.

8. Define cycle stealing.

During any given bus cycle, one of the system components connected to the system bus is given control of the bus. This component is said to be the master during that cycle and the component it is communicating with is said to be the slave. The CPU with its bus control logic is normally the master, but other specially designed components can gain control of the bus by sending a bus request to the CPU. After the current bus cycle is completed the CPU will return a bus grant signal and the component sending the request will become the master. Taking control of the bus for a bus cycle is called cycle stealing.

9. Give the difference between uniprogramming and multiprogramming.

Uniprogramming	Multiprogramming
1. When processes are executed in a serial fashion, the system is called a uniprogramming system.	When processes are executed in a time multiplexed fashion, the system is called a multiprogramming system
2. In such systems, normally only one process is stored in the memory at a time and the next process is not loaded for execution until the current one is terminated.	For a multiprogramming environment, the code for two or more processes is in memory at the same time and is executed.

10. What are the three states in process management.

- 1. Running**-When the process is currently being executed by the CPU.
- 2. Blocked**-When the execution of the process cannot be continued because it is waiting for an event to occur, e.g., it is waiting for the completion of an I/O operation.
- 3. Ready**-When the execution of the process can be resumed any time. For example, the I/O process has been waiting has finished and the processing is able to continue.

11. Define semaphore.

A flag used to reserve a shared resource is called a semaphore and the operations of requesting and releasing the resource are commonly known as the P and V semaphore operators. If FLAG = 1 indicates that the resource is free and FLAG = 0 indicates it is busy.

12. Define bus and explain what is meant by internal bus and external bus.

A set of conductors used for communicating information between the components in a computer system is called a **bus**. If a bus connects two minor components within a major component (e.g., the control unit to the set of working registers within the CPU), it is called an internal bus. When a bus connects two major components, such as a CPU and an interface, it is called an external bus.

13. What is meant by multiprocessing system?

If a system includes two or more components that can execute instructions simultaneously, it is called a multiprocessing system. The added processors could be special purpose processors which are specifically designed to perform certain tasks efficiently, or other general purpose processors. For example, due to the 8086's limited data width and its lack of floating point arithmetic instructions, it requires many instructions to perform a single floating point operation.

14. What are the desirable features of multiprocessor configuration?

- Several processors may be combined to fit the needs of an application.
- The tasks are divided among the modules.

- If any failure occur, it is easier and cheaper to find and replace the malfunctioning processor than it is to find and replace the failing part in a complex processor.

15. What are the three basic configuration of multiprocessor configuration.

Multiprocessing features are provided in maximum mode to accommodate three basic configurations. They are the

1. Coprocessor configuration
2. Closely coupled configurations
3. Loosely coupled configurations.

16. What are the advantages of loosely coupled configuration?

A loosely coupled configuration provides the following advantages:

1. High system throughput can be achieved by having more than one CPU.
2. Each bus master module is an independent unit and normally resides on a separate PC board. Therefore, a bus master module can be added or removed without affecting the other modules in the system.
3. A failure in one module normally does not cause a breakdown of the entire system and the faulty module can be easily detected and, replaced.
4. Each bus master may have a local bus to access dedicated memory or I/O devices so that a greater degree of parallel processing can be achieved.

17. What are the three schemes that are used for establishing priority in loosely coupled configuration? (or) State the ways by which bus contention problem can be removed.

There are three schemes for establishing priority:

1. Daisy chaining.
2. Polling.
3. Independent requesting.

PART B

1. **With necessary diagram explain in detail about multiprocessor configuration?**
2. **Describe the maximum mode signals, and maximum mode system configuration of 8086 microprocessor in detail.(16)**
3. **Describe the minimum mode signals, and minimum mode system configuration of 8086 microprocessor in detail.(16)**
4. **Explain maximum mode bus cycle in 8086 microprocessor. (8)**