

**MODULE 01**  
**8051 MICROCONTROLLER**  
**QUESTION BANK**

1. With neat block diagram explain the architecture of 8051.
2. List out the salient features of 8051 Microcontroller.
3. Define Embedded System. Explain how embedded system is different from processors.
4. Sketch the pin configuration of port 0 and explain the various operations performed by the pins of port 0.
5. Sketch the pin configuration of port 1 and explain the various operations performed by the pins of port 1.
6. Draw and explain the memory organization of 8051 Microcontroller.
7. Explain the significance of program status word (PSW). Briefly discuss the PSW register of 8051 Microcontroller.
8. Interface 8K RAM to 8051 Microcontroller.
9. Interface 8K EPROM and 4K RAM to 8051.
10. Interface 16K EPROM and 8K RAM to 8051 Microcontroller.
11. Interface 4K ROM and 4K RAM to 8051.
12. Explain the PIN configuration of 8051.

### OBJECTIVE TYPE QUESTIONS

1. The internal RAM memory of 8051 is
  - a. 32 bytes
  - b. 64 bytes
  - c. 128 bytes
  - d. 256 bytes
2. The 8051 has ----- 16 bit timers/counters.
  - a. 1
  - b. 2
  - c. 3
  - d. 4
3. The address space of 8051 is divided into four distinct areas: internal data, external data, internal code external code.
  - a. TRUE
  - b. FALSE
4. 8051 pin diagram has
  - a. 39 pins
  - b. 20 pins
  - c. 10 pins
  - d. 40 pins
5. 8051 has \_\_\_\_\_ bit Address bus
  - a. 10
  - b. 20
  - c. 16
  - d. 32
6. 8051 has \_\_\_\_\_ bit Data bus
  - a. 8
  - b. 20
  - c. 16
  - d. 32
7. ALE stands for
  - a. Address Enable Latch
  - b. Latch Enable Address
  - c. Address Latch Enable
  - d. Enable Latch Address
8. The internal ROM memory of 8051 is
  - a. 4K bytes
  - b. 64K bytes
  - c. 128K bytes
  - d. 256K bytes
9. How many Ports 8051 is having
  - a. 1
  - b. 2
  - c. 3
  - d. 4

10. PSW stands for
- Program Standing verb
  - Printing status word
  - Ping stats word
  - Program Status Word
11. PSW is \_\_\_\_\_ bit register
- 8
  - 16
  - 4
  - 32
12. Program Counter is
- Used to hold the address of next instruction to be fetched
  - Used to print the next data
  - Used to store the RAM address
  - None of the above
13. 8051 Microcontroller is
- Application Specific
  - General Purpose
  - All of these
  - None of the above
14. PSEN in 8051 is
- Program Specific Enable
  - Printing Screen Enable
  - Program Store Enable
  - None of the above
15. Accumulator register is
- Bit Addressable
  - Byte Addressable
  - All the above
  - None of the above
16. Program Counter is \_\_\_\_\_ bit register
- 8
  - 16
  - 4
  - 32
17. Data Pointer is \_\_\_\_\_ bit register
- 8
  - 16
  - 4
  - 32

18. DPTR stands for

- a. Data Pointer
- b. Dynamic Pointer
- c. Deletion Pointer
- d. Direct Pointer

19. Criteria for Choosing Microcontroller

- a. Speed
- b. Power Consumption
- c. Cost Per Unit
- d. All the above

20. DIP stands for

- a. Dual in Line Package
- b. Data in Line Package
- c. Degree Improvement Program
- d. None of the above



**MODULE 02 INSTRUCTION SETS**  
**QUESTION BANK**

1. Define addressing mode. Explain the different types of addressing with examples.
2. Explain DAA instruction with example.
3. Explain Rotate Instruction with example.
4. Explain the Instructions with examples.
  - a) SWAP or SWAP A
  - b) XCH A, 40h
  - c) XCHD A, 40h
  - d) MUL AB
  - e) SUBB
5. Explain the Instructions with examples.
  - a) MOV C, bit
  - b) DIV AB
  - c) MOVB
  - d) MOVC
  - e) SETB
6. Explain Boolean Instructions with example.
7. Explain Logical Instructions with example.
8. With an example explain the conditional jump instructions.
9. Explain Unconditional Jump with example.
10. Define Assembler directives. Explain the different types of assembler directives.
11. Write an ALP to transfer a block of data from one memory to another memory without overlap
12. Write an ALP to transfer a block of data with overlap
13. Write an ALP to add two 8 bit data
14. Write an ALP to subtract two 8 bit data
15. Write an ALP to multiply two 8 bit data
16. Write an ALP to divide two 8 bit data

### OBJECTIVE TYPE QUESTIONS

1. This program will be executed continuously

```
Go: MOV A, #01  
    JNZ Go
```

- a. True   b. False   c. None of the above   d. All of the above
2. Data transfer from I/O to external data memory can only be done with MOVX command
- a. True   b. False   c. None of the above   d. All of the above
3. Mov A, #55h belongs to
- a. Immediate Addressing Mode  
b. Register Addressing Mode  
c. Direct Addressing Mode  
d. Indirect Addressing Mode
4. Mov R0,40h belongs to
- a. Immediate Addressing Mode  
b. Register Addressing Mode  
c. Direct Addressing Mode  
d. Indirect Addressing Mode
5. Mov RL, DPL belongs to
- a. Immediate Addressing Mode  
b. Register Addressing Mode  
c. Direct Addressing Mode  
d. Indirect Addressing Mode
6. Mov @R1, B belongs to
- a. Immediate Addressing Mode  
b. Register Addressing Mode  
c. Register Indirect Addressing Mode  
d. Indexed Addressing Mode
7. Movc A, @A + DPTR belongs to
- a. Immediate Addressing Mode  
b. Register Addressing Mode  
c. Register Indirect Addressing Mode  
d. Indexed Addressing Mode

8. In MOV instruction data always moves from
- a. Destination to Source
  - b. Source to Destination
  - c. Destination to Destination
  - d. None of the above
9. In Register Indirect Addressing Modes we can use only
- a. R0 and R1
  - b. R0 and R2
  - c. R1 and R2
  - d. R3 and R7
10. DAA stands for
- a. Decimal Adjust Accumulator After Addition
  - b. Data Adjust After Addition
  - c. Decimal Accurate Addition
  - d. None of the above
11. AND operation is used to
- a. Set a bit
  - b. Mask a bit
  - c. To check whether two registers have same value
  - d. None of the above
12. OR operation is used to
- a. Set a bit
  - b. Mask a bit
  - c. To check whether two registers have same value
  - d. None of the above
13. XRL operation is used to
- a. Set a bit
  - b. Mask a bit
  - c. To check whether two registers have same value
  - d. None of the above
14. SWAP instruction is used to
- a. Interchange Lower Nibble with Upper Nibble
  - b. Interchange D3 with D4
  - c. All of the above
  - d. None of the above



15. Identify the Unconditional Jump

- a. SJMP
- b. LJMP
- c. JMP
- d. All of the above

16. Identify the Conditional Jump

- e. SJMP
- f. LJMP
- g. DJNZ
- h. All of the above

17. This program will be executed continuously

```
Go: MOV A, #00  
    JNZ Go
```

- a. True   b. False   c. None of the above   d. All of the above

18. NOP does

- a. Performs No Operations
- b. Performs ADD operation
- c. Complement Carry bit
- d. All of the above

19. CPL A does

- a. No operation
- b. Complement Accumulator
- c. Complement Carry bit
- d. All of the above

20. INC does

- a. Increment the content of register by 01
- b. Decrement the content of register by 01
- c. Increment the content of register by 02
- d. Decrement the content of register by 02

## **8051 SERIAL COMMUNICATION**

### **MODULE 04**

1. Define Communication. Explain the Serial communication with diagram.
  2. Define Communication. Explain the Parallel communication with diagram.
  3. With neat diagram explain the Asynchronous serial communication data transmission.
  4. With neat diagram explain the Asynchronous serial communication data transmission.
  5. Differentiate between the Asynchronous and synchronous serial communication.
  6. Classify the Simplex, Half Duplex and Full Duplex serial data transmission with example.
  7. Explain the SCON (Serial Control Register) in detail.
  8. Explain the PCON (Power Control Mode) Special Register.
  9. Write the procedure to program the 8051 to transfer the data serially.
  10. Write the procedure to program the 8051 to receive the data serially.
  11. Write an 8051 assembly language program to transfer letter "G" serially at 9600 baud rate continuously.
  12. Write a C language program to transfer letter "G" serially at 9600 baud rate continuously.
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1. Explain the architecture of 8255 with neat diagram.
  2. Explain the control word format of 8255.
  3. Interface ADC 0808 using 8255.

## OBJECTIVES TYPES QUESTIONS

### MODLE 04

1. MODEM Is also called
  - a. Modulator/Demodulator
  - b. MEMS
  - c. Baud Rate
  - d. None of these
2. Asynchronous serial communication is widely used for
  - a. Character Oriented Transmission
  - b. Word Oriented Transmission
  - c. Double word Oriented Transmission
  - d. Nibble Oriented Transmission
3. Addition of start and stop bit gives
  - a. 10% Overhead
  - b. 25% Overhead
  - c. 20% Overhead
  - d. 40% Overhead
4. In serial communication sometimes parity bit is added to maintain
  - a. Data Integrity
  - b. Double Integrity
  - c. Single Integrity
  - d. None of these
5. Baud Rate is also called as
  - a. Bits per second
  - b. Bits per minute
  - c. Bits per hour
  - d. None of these
6. Crystal Frequency for 8051 is
  - a. 10.05MHZ
  - b. 20.05MHZ
  - c. 13.0592MHZ
  - d. 11.0592MHZ
7. In Synchronous serial communication
  - a. Common clock is used
  - b. Individual clock is used
  - c. No clock is used
  - d. None of these

8. In Synchronous serial communication
  - a. Data Transfer takes place in blocks
  - b. Data Transfer is character oriented
  - c. All of these
  - d. None of these
9. In simplex serial data transmission
  - a. Data Transmission takes place in one direction
  - b. Data Transmission takes place in both direction
  - c. Data Transmission take place in No direction
  - d. None of these
10. Walkie -Talkie is an example for
  - a. Simplex Data Transmission
  - b. Half Duplex Data Transmission
  - c. Full Duplex Data Transmission
  - d. All of these
11. In Full Duplex serial data transmission
  - a. Data Transmission take place in one direction
  - b. Data Transmission takes place in both direction
  - c. Data Transmission take place in No direction
  - d. None of these
12. SCON (Serial Control Register) is an
  - a. 8- bit Register
  - b. 10- bit Register
  - c. 16-bit Register
  - d. 32-bit Register
13. REN in SCON register is called
  - a. Reception Encounter
  - b. Real Enable
  - c. Read Enable
  - d. Receive Enable
14. SCON is also called
  - a. Serial Control Register
  - b. Set Control Resister
  - c. System Control Register
  - d. None of these

15. PCON is also called
- Program Counter Register
  - Pin Control Register
  - Power Control Register
  - None of these
16. SMOD = 1 in SCON is used to
- Decrease the baud rate
  - Double the baud rate
  - Multiply the baud rate
  - None of these
17. SBUF in serial communication is used for
- Transmission
  - Reception
  - Both Transmission and Reception
  - All of these
18. 8255 Architecture has
- 24 programmable Input Output Pin
  - 14 programmable Input Output Pin
  - 34 programmable Input Output Pin
  - 44 programmable Input Output Pin
19. PPI in 8255 is also called
- Programmable Peripheral Interface
  - Program Pin Interface
  - Program Prevent Interface
  - Program Print Interface
20. BSR in 8255 is also called
- Bit Set - Reset Mode
  - Board Set Range
  - Bit Super Range
  - Bit Service Range

Basics of 8086 and Bus Configuration

**MODULE 05**

**BASICS OF 8086**

1. With the neat block diagram explain the architecture of 8087
2. Differentiate between RISC and CISC
3. Differentiate Von-Neumann and harvard Architecture
4. Differentiate between Microcontroller and Microprocessor
5. Explain the DOS functions of 8086 with example

**SYSTEM BUS CONFIGURATION OF 8086**

1. With neat diagram explain the minimum mode operation of 8086
2. Differentiate between Minimum mode and Maximum mode
3. With neat diagram explain the maximum mode operation of 8086
4. Explain with neat diagram the general bus operation of 8086

### **OBJECTIVE TYPE QUESTIONS**

1. 8087 is also called
  - a. NPX
  - b. NDP
  - c. FUP
  - d. All of these
  
2. 8087 is also called
  - a. Math Coprocessor
  - b. Matrix Coprocessor
  - c. Application Specific
  - d. None of these
  
3. 8087 is compatible with
  - a. 8086 & 8088
  - b. 8087 & 8088
  - c. 8051 & 8052
  - d. 8085 & 8086
  
4. 8087 is a
  - a. Processor
  - b. Coprocessor
  - c. Controller
  - d. None of these
  
5. Architecture 8087 is divided into
  - a. Control Unit and Numeric Execution Unit
  - b. Control Unit and Execution Queue
  - c. Control Unit and Execution Unit
  - d. None of these

6. 8087 Coprocessor is used for

- a. Floating point operation
- b. Hexadecimal Operation
- c. None of these
- d. All of these

7. Microcontroller has Memory

- a. On Chip
- b. Off Chip
- c. No Memory
- d. None of these

8. In Microcontroller

- a. More number of pins are Multifunctional
- b. Less Number pins are Multifunctional
- c. No pins are Multifunctional
- d. None of these

9. RISC stands for

- a. Reduced Instruction Set Computer
- b. Risk Instruction Set Computer
- c. Range Instruction Set Computer
- d. Risk Instruction Standard Computer

10. CISC stands for

- a. Complex Instruction Set Computer
- b. Compound Instruction Set Computer
- c. Computer Instruction Set Computation
- d. Collect Instruction Set Computer



11.RISC is

- a. Highly Pipelined
- b. Less Pipelined
- c. No Pipelined
- d. None of these

12. Von Neumann is also called

- a. Harvard Architecture
- b. Princeton Architecture
- c. Coprocessor Architecture
- d. None of these

13.Von Neumann has

- a. Single Memory Space for Code and Data
- b. Separate Memory Space for Code and Data
- c. No Memory Space for Code and Data
- d. None of these

14. Harvard Architecture has

- a. Single Memory Space for Code and Data
- b. Separate Memory Space for Code and Data
- c. No Memory Space for Code and Data
- d. None of these

15.Advanced RISC Machine (ARM) is example for

- a. RISC
- b. CISC
- c. All of these
- d. None of these

16.DOS function used to display a string

- a. Mov ah, 00h
- b. Mov ah, 01h
- c. MOv ah, 08h
- d. Mov ah, 09h

17. DOS function used to Read a string

- a. Mov ah, 0Ah
- b. Mov ah, 01h
- c. MOv ah, 08h
- d. Mov ah, 09h

18.DOS function used to Display a single Character

- a. Mov ah, 0Ah
- b. Mov ah, 01h
- c. MOv ah, 02h
- d. Mov ah, 09h

19.DOS function used to Read a Character with Echo

- a. Mov ah, 0Ah
- b. Mov ah, 01h
- c. MOv ah, 02h
- d. Mov ah, 09h

20. DOS function used to Read a Character without Echo

- a. Mov ah, 0Ah
- b. Mov ah, 01h
- c. MOv ah, 08h
- d. Mov ah, 09h

**MODULE 03 8051 Stack and Interrupt, Timers**  
**QUESTION BANK**

**8051 Stack and Interrupt**

1. Define stack. Explain the operation of stack in detail.  
Or  
Define stack. Explain the PUSH and POP operation in 8051
2. Differentiate between the polling and interrupt.
3. Define interrupt. Explain the steps in executing an interrupt.
4. Explain the interrupt vector table of 8051.
5. Write the steps in enabling and disabling an 8051 interrupt.
6. Explain the level triggered interrupt in 8051.
7. Explain the Edge triggered interrupt in 8051.
8. Explain the in interrupt priority in 8051.
9. Show the instruction
  - a) To enable serial interrupt b) Timer0 interrupt c) External hardware interrupt1 (EX1)
  - b) To disable all the interrupt.
10. Assume that after reset, the interrupt priority is set by the instruction "MOV IP , #00001100B.  
Discuss the sequence in which the interrupt are serviced.

**8051 Timers**

1. Explain the TMOD register of 8051 in detail.
2. Configure Timer0 to run as
  - a) 16bit timer with only internal control
  - b) 16bit timer with external control
  - c) 16bit counter with internal control
  - d) 16bit counter with external control
3. Find the value of TMOD to operate as timer in following mode.
  - a) Mode1 Timer1
  - b) Mode2 Timer0
  - c) Mode0 Timer1
4. Find the timer clock frequency and its period for various 8051 based system with following crystal frequency.
  - a) 12MHZ b) 16MHZ c) 11.0592MHZ
5. Explain the TCON register in detail.
6. Explain the steps to program in mode1.
7. Explain the procedure for time delay generation.
8. Write an assembly language program to generate a delay of 12μsec using timer1 in mode1 with crystal frequency of 22MHZ.

### **OBJECTIVE TYPES QUESTIONS**

1. PUSH supports only
  - a) Direct addressing mode
  - b) Indirect addressing mode
  - c) Register addressing mode
  - d) Immediate addressing mode
  
2. When PUSH operation take place
  - a) SP is incremented by two
  - b) SP is incremented by one
  - c) SP is incremented by three
  - d) SP is incremented by four
  
3. By default stack pointer points to
  - a) 0FFh
  - b) 00h
  - c) 07h
  - d) 0FEh
  
4. POP supports only
  - a) Direct addressing mode
  - b) Indirect addressing mode
  - c) Register addressing mode
  - d) Immediate addressing mode
  
5. POP A is
  - a) Valid instruction
  - b) Invalid instruction
  - c) All of these
  - d) None of these
  
6. Pushing the data on to the stack is called
  - a) SWAP
  - b) POP
  - c) PUSH
  - d) None of these

7. Retrieving the data from the stack is called
- a) SWAP
  - b) POP
  - c) PUSH
  - d) None of these
8. ISR stands for
- a) Interrupt service routine
  - b) Increment service routine
  - c) Interrupt swap routine
  - d) None of these
9. How many interrupts are there in 8051
- a) Six
  - b) Eight
  - c) Twelve
  - d) Ten
10. Priority can be assign to the 8051 interrupt
- A) Yes
  - B) NO
  - C) None of these
  - D) All of these
11. Timer1 is \_\_\_\_bit register
- A) 8bit
  - B) 4bit
  - C) 16bit
  - D) 32bit
12. Timer0 is \_\_\_\_bit register
- a) 8bit
  - b) 4bit
  - c) 16bit
  - d) 10bit
13. TMOD is an \_\_\_\_bit register
- a) 8bit
  - b) 10bit
  - c) 12bit
  - d) 16bit

14. TMOD can be configure as

- a) Timer
- b) Counter
- c) Both Timer and Counter
- d) None of these

15. Mode0 operating as

- a) 13bit timer
- b) 16bit timer
- c) 8bit auto reload mode
- d) Split mode

16. Mode1 operating as

- a) 13bit timer
- b) 16bit timer
- c) 8bit auto reload mode
- d) Split mode

17. Mode2 operating as

- a) 13bit timer
- b) 16bit timer
- c) 8bit auto reload mode
- d) Split mode

18. Mode3 operating as

- a) 13bit timer
- b) 16bit timer
- c) 8bit auto reload mode
- d) Split mode

19. TCON is a \_\_\_\_ bit register

- a) 4bit
- b) 8bit
- c) 16bit
- d) 32bit

20. Timer is used to

- a) Generate a delay
- b) Generate count
- c) Clear the value
- d) Set the value