

2021

MICROCONTROLLER & APPLICATIONS

Full Marks: 60

Time: Two hours

The figures in the margin indicate full marks for the questions.

A. Multiple Choice Questions 1 x 20=20

1. Microcontrollers usually have:
 - a. CPU
 - b. RAM+ROM
 - c. peripherals
 - d. all of the above
2. Harvard architecture has:
 - a. separate data and program memory
 - b. unified cache memory
 - c. multiple functional units
 - d. an on-chip cache
3. RS0 and RS1 are:
 - a. not a part of the PSW as these are not the flags
 - b. part of the register banks
 - c. PSW.4 and PSW.5, respectively, for selecting the register bank in the PSW
 - d. PSW.3 and PSW.4, respectively, for selecting the register bank in the PSW
4. In 8051 microcontroller, a machine cycle consists of:
 - a. 6 states
 - b. 10 states
 - c. 1 state
 - d. 4 states

5. If $A = D6H$ and $CY=0$, the contents of A after execution of instruction RLC A will be:
 - a. CA H
 - b. AC H
 - c. AD H
 - d. DA H
6. In the DIV AB instruction:
 - a. Divisor is stored in A
 - b. Dividend is stored in B
 - c. Divisor is stored in B
 - d. Dividend is stored in A
7. The output of DAC 0808 is usually connected to:
 - a. current-to-voltage converter
 - b. amplifier
 - c. attenuator circuit
 - d. integrator
8. If the $A=06H$, $B= 02H$, Find the value of MUL AB
 - a. 0A
 - b. 0B
 - c. 0C
 - d. 08
9. Addition instruction of the 8051 can affect,
 - a. carry flag
 - b. auxiliary carry flag
 - c. overflow flag
 - d. all of the above
10. Which pin of ADC 0808 indicates that the conversion is complete?
 - a. EOC
 - b. SC
 - c. OE
 - d. ALE

11. The start-conversion command is given to ____ pin of the ADC0808.
 - a. WR
 - b. CS
 - c. INTR
 - d. Vref
12. Seven-segment code for number 5 for the common cathode display is:
 - a. 3FH
 - b. 5BH
 - c. 66H
 - d. 6DH
13. The contents of the accumulator after execution of following instructions will be, MOV A, #55H ORL A, 01H :
 - a. 1B H
 - b. 55 H
 - c. 3B H
 - d. 4B H
14. Bit-addressable internal RAM has address range of:
 - a. 10H to 1FH
 - b. 20H to 2FH
 - c. 30H to 3FH
 - d. 40H to 4FH
15. The 8051 has bit-level instructions for
 - a. AND
 - b. OR
 - c. complement
 - d. all
16. Which of the following SFRs is bit-addressable?
 - a. SP
 - b. P2
 - c. TMOD
 - d. SBUF

17. What is the function of the instruction: SETB P1.0
 - a. used for any bits of I/O ports 0, 1, 2, and 3
 - b. Reset the first bit port of P1
 - c. Clear the port P1.0
 - d. Set the first bit port of P1.0
18. Which of the following is a byte jump instruction?
 - a. JC 03H
 - b. JNC 03H
 - c. JZ 01H
 - d. CLR C
19. The common extensions of an assembly language program are:
 - a. .s
 - b. .asm
 - c. .obj
 - d. .hex
20. The crystal frequency for a 8051-based systems is 16 MHz, find the period of the machine cycle.
 - a. 1.085uSec
 - b. 0.6uSec
 - c. 0.75uSec
 - d. 16uSec

B. Very Short Question

2*6=12

1. List flags available in the 8051?
2. What is the use of SBUF register?
3. Name the peripheral Data registers in 8051.
4. Mention the different types of interrupt in 8051.
5. What are the addressing modes for data transfer in 8051?
6. Which SFRs are used for a proper serial communication between 8051 and a device.

C Short Question

4*7=28

1. Mention the basic differences in between use of Timer as a counter and timer.
2. Write an assembly program to read data : FFh from a memory location 10H

store it to another memory location at 21H.

3. A common cathode type 7-segment display is interfaced to the port1 of 8051 microcontroller, draw the diagram and if i want to display character '2', mention the byte to written onto this port.
4. Explain the Mode-1 of timer with its application.
5. Explain how the RAM space is used for various purposes.
6. Write a short note of UART for 8051 microcontroller.
7. Write a program to clear accumulator, then add 02H to the accumulator 5 times.
