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1 CHAPTER
Introduction to 8085 and its Functional Organisation

MCQ and NAT Questions

Q.1 Microprocessor 8085 is the enhanced version of ____ with essentially the same construction set.
(a) 6800 (b) 68000
(c) 8080 (d) 8000

Q.2 The data bus in 8080A / 8085 microprocessor is a group of
(a) eight bidirectional lines that are used to transfer 8 bits between the microprocessor and its I/O and memory
(b) eight lines used to transfer data among the registers
(c) eight unidirectional lines that are used for I/O devices
(d) sixteen bidirectional lines that are used for data transfer between the microprocessor and memory

Q.3 Three devices A, B and C are connected to an Intel 8085 A microprocessor. Device A has the highest priority and device C has the lowest priority. The correct assignment of interrupt inputs is
(a) A uses RST 5.5, B uses RST 6.5 and C uses TRAP
(b) A uses RST 5.5, B uses RST 6.5 and C uses RST 7.5
(c) A uses TRAP, B uses RST 6.5 and C uses RST 5.5
(d) A uses TRAP, B uses RST 5.5 and C uses RST 7.5

Q.4 The output data lines of microprocessors and memories are usually tristated, because
(a) More than one device can transmit information over the data bus by enabling only one device at a time
(b) More than one device can transmit information over the data bus at the same time
(c) The data lines can be multiplexed for both input and output
(d) It increases the speed of data transfers over the data bus

Q.5 Machine instructions are written using which of the following?
(a) Bits 0 and 1 only
(b) Digits 0 to 9 only
(c) Digits 0 to 9 and the capital alphabets A to Z only
(d) Digits 0 to 9, the capital alphabets A to Z and certain special characters

Q.6 An 8085 μp based system drives a multiplexed 5-digits 7-segment display. The digits are refreshed at a rate of 500 Hz. The ON time for each digit is
(a) 4 ms (b) 0.4 ms
(c) 10 ms (d) 25 ms

Q.7 A memory chip can be represented as 8192×32. If there are p number of address lines and q number of data lines for the memory chip, then q-p will be equal to _____.

Q.8 What is the function of a program counter in an 8-bit microprocessor?
(a) To store the op-code of the instruction being executed
(b) To store the op-code of the next instruction
(c) To store the address of the instruction being executed
(d) To store the address of the next instruction

Q.9 When an application is designed using a microcontroller it has the following advantages over a design based on a microprocessor :
1. Its chip count is less.
2. It is more fault tolerant.
3. It is cheaper.

Which of these are correct?
(a) 1, 2 and 3 (b) 1 and 2 only
(c) 1 and 3 only (d) 2 and 3 only

Q.10 An 'Assembler' in a microprocessor is used for
(a) assembly of processors in a production line
(b) creation of new programs using different modules

(c) translation of a program from assembly language to machine language
(d) translation of a higher level language into English text

Q.11 What is the direction of control bus?
(a) Unidirectional into microprocessor
(b) Unidirectional out of microprocessor
(c) Bidirectional
(d) Mixed direction i.e. some lines into microprocessor and some others out of microprocessor

Q.12 Which one of the following statements is correct? A microprocessor program written in assembly language is translated into machine language. The number of instructions in the machine language when compared with the number of instructions in assembly language is
(a) More only (b) Same
(c) Less only (d) Either more or less

Q.13 The synchronisation between microprocessor and memory is done by
(a) ALE signal (b) HOLD signal
(c) READY signal (d) None of these

Q.14 The stack pointer in the 8085 microprocessor is a
(a) 16 bit register that point to stack memory locations
(b) 16 bit accumulator
(c) memory location in the stack
(d) flag register used for the stack

Q.15 In 8085 microprocessor, RST-*n* instruction is executed. If the vector address location corresponding to the RST-*n* instruction is 0038 H, then the value of n is _____.

Q.16 In 8085 microprocessor, the value of the most significant bit of the result following the execution of any arithmetic or Boolean instruction is stored in the
(a) carry status flag
(b) auxiliary carry status flag
(c) sign status flag
(d) zero status flag

Q.17 An 8085 microprocessor is using a crystal frequency of 5 MHz. The duration of one T-state would be _____ ns.

Q.18 In 8085 microprocessor, the interrupt which is both edge as well as level sensitive has vector address of $(\_\_\_\_\_)_{10}$.

Q.19 Match **List-I** with **List-II** and select the correct answer using the codes given below the lists:

List-I
A. Monitor program
B. Assembler
C. Mnemonic
D. Program counter

List-II
1. Used to indicate memory location
2. A combination of letters, symbols and numerals
3. A program that translates symbolic instructions into binary equivalent
4. An operating system

Codes:

	A	B	C	D
(a)	4	3	2	1
(b)	4	3	1	2
(c)	3	4	1	2
(d)	3	4	2	1

Q.20 Which of the following statement is false ?
1. The 8085 has two 16-bit registers, the PC and SP. The PC is used to sequence the execution of a program and the stack pointer is used as a memory pointer for the stack memory.
2. 8085 responds to four externally initiated operations-reset, interrupt, ready and hold.
3. The interconnection of peripherals with the 8085 MPU, additional logic circuits, called interfacing devices are necessary.

(a) only 1 is false (b) only 2 is false
(c) only 3 is false (d) None of these

Q.21 In a microprocessor, the service routine for a certain interrupt starts from a fixed location of memory which cannot be externally set, but the interrupt can be delayed or rejected. Such an interrupt is
(a) non-maskable and non-vectored
(b) maskable and non-vectored
(c) non-maskable and vectored
(d) maskable and vectored

Q.22 In a microprocessor when a CPU is interrupted, it
(a) Stops execution of instructions
(b) Acknowledges interrupt and branches of subroutine
(c) Acknowledges interrupt and continues
(d) Acknowledges interrupt and waits for the next instruction from the interrupting device

Answers Introduction to 8085 and its Functional Organisation

1.	(c)	2.	(a)	3.	(c)	4.	(a)	5.	(a)	6.	(b)	7.	(19)
8.	(d)	9.	(a)	10.	(c)	11.	(d)	12.	(b)	13.	(c)	14.	(a)
15.	(7)	16.	(c)	17.	(400)	18.	(36)	19.	(a)	20.	(d)	21.	(d)
22.	(d)	23.	(b)	24.	(a)	25.	(d)	26.	(b)	27.	(a)	28.	(b, c, d)
29.	(b, c, d)												

Explanations Introduction to 8085 and its Functional Organisation

1. (c)

8085 is advanced version of Intel 8080.

2. (a)

Data bus is of 8-bits and bidirectional and transfer data between microprocessor and memory/IO.

3. (c)

Priority order:

TRAP > RST 7.5 > RST 6.5 > RST 5.5 > INTR

4. (a)

The output data lines of microprocessor and memories are tristate because more than one device can transmit information over the data bus by enabling only one device at a time.

5. (a)

A programme written with 0's and 1's is called machine language programme. However sometime to facilitate programmer, machine code can be written in hexadecimal numbers.

6. (b)

At a time 8085 can drive only a digit. In a second, each digit is refreshed 500 times. Thus time given to each digit

$$= \frac{1}{(5 \times 500)} = 0.4 \text{ ms}$$

7. (19)

Given: Memory chip $8192 \times 32 = 2^{13} \times 32$

$\therefore$ 13 address lines and 32 data lines

$\therefore \quad q - p = 32 - 13 = 19$

8. (d)

It is used to store 16-bit address of the next byte to be fetched from memory or address of the next instruction to be executed.

9. (a)

A microcontroller is an embedded system with some specific functions like vending machine, electronic parking meters. The processor has to perform simple and low grade computational functions. So the process is simple and cheaper. Its chip count i.e. number of chips circuitry is less. A microcontroller is put into function once and the system where it is used is rugged. No changes or complexities are required. It is immune to virus attacks. So it is more to be fault tolerant.

10. (c)

An 'Assembler' is used for translation of a program from assembly language to machine language.

11. (d)

Control bus have some lines into microprocessor and some out of microprocessor.

12. (b)

A program written in assembly language is translated into machine language. Number of instructions in assembly and machine language is same.

13. (c)

READY is an active high pin used to interface slow peripheral devices with 8085.

14. (a)

Stack pointer is of 16-bit register and it points to the stack memory locations and generally used in case of interrupt or PUSH, POP instructions.

15. (7)

$$0038\,H = (56)_{10}$$
$$n \times 8 = 56$$
$$n = 7$$