

Question #1: (30 points) Select the best answer:-

- 1) What kind of operations the CPU can perform
 - A) Arithmetic operations
 - B) Logical operations
 - C) Arithmetic and logical
 - D) None of the above.
- 2) All are considered as an Input device Except (ما عدا)
 - A) Keyboard
 - B) Scanner
 - C) Microphone
 - D) Monitor
- 3) The instruction cycle will include the four following ordered processes
 - A) Store, fetch, execute and decode.
 - B) Fetch, execute, decode and store.
 - C) Fetch, decode, execute and store.
 - D) Decode, fetch, execute and store.
- 4) The storage device which has the highest performance among these is
 - A) RAM
 - B) Hard disk
 - C) Cache memory
 - D) Registers

5) $(120)_5 = (\quad)_6$

A) 55

B) 56

C) 54

D) 120

6) A floating point representation is usually represented in memory using:

A) 16 bits

B) 4 bytes

C) 32 bytes

D) None of the above.

7) The exponent part of the floating point representation for the number 0.0625 is :

A) 01111011

B) 01101111

C) 01111111

D) None of the above.

8) Using 8 bits to represent an integer, the 2's complement representation of the integer (-20) is

A) 11101101

B) 11101100

C) 00010100

D) None of the above.

9) The representation in Hexadecimal of Capital C in memory using odd parity is

A) C3

B) 43

C) 44

D) None of the above.

10) In order to get five random paragraphs in Microsoft word we used the command

A) =rand(5)

B) =rand(4)

C) random(5)

D) rnd

Answer sheet for question 1

1	2	3	4	5	6	7	8	9	10
C	D	C	D	A	B	D	B	B	A.

* Question #2: (25 points)

A) (15%) Using two's complement with 8 bits representation, solve the following (show your work):

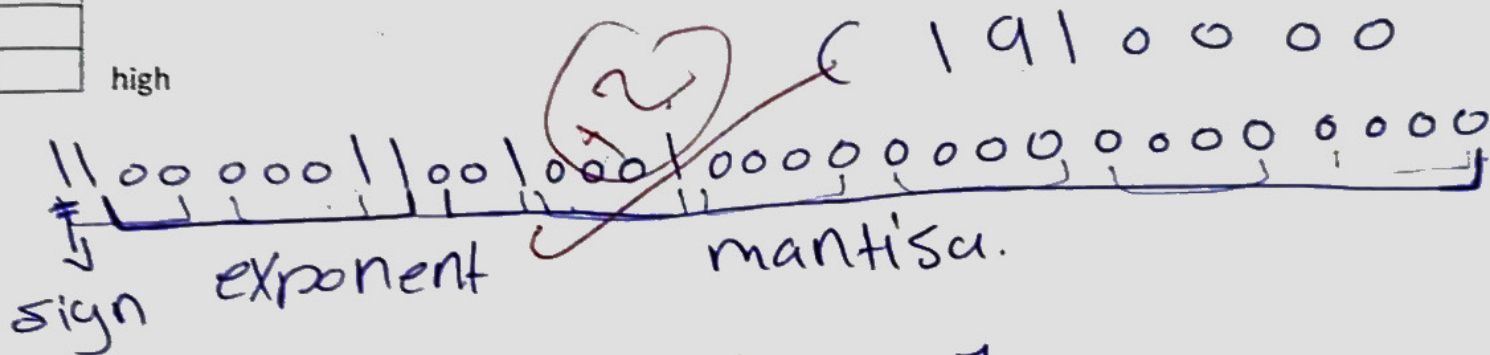
$$(73)_8 - (63)_9 = (\quad)_2$$

Handwritten notes in blue and red ink. The word "base" is written in blue and circled in red. The number "8" is written in red and circled in red. The number "2" is written in blue. There are also some scribbles and arrows.



B) (10%) The value below represents a float value in the computer memory using 32-bit floating point representation. Find out the decimal value for this representation. (Show the solution steps).

00	low
00	
91	
C1	high



$$\begin{aligned}
 (10000011)_2 &\rightarrow 1 \times 2^7 + 1 \times 2^1 + 1 \times 2^0 \\
 &= 1 + 2 + 128 \\
 &= 131 \times 2
 \end{aligned}$$

$$131 - 127 = 4$$

$$\begin{aligned}
 &= 4 \times 2^4 \\
 &= (0010.001)_2
 \end{aligned}$$

$\rightarrow +3$

\rightarrow

Question #3: (25 points)

Write an algorithm (*pseudo code*) that will calculate the following series as

$$Y = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \dots$$

The calculation will end when the term (الحد) reach less than 0.001.

~~set sum of y equal zero.~~

~~while~~

~~ask the user to enter term.~~

Question #4: (20 points)

A) (9%)

Clearly explain the difference between the following pairs of terms:

i) TCP vs UDP :

TCP:- Transmission control protocol, connection oriented.
it needs 6ms to move data, error free.

UDP:- User Datagram protocol, connection less.
it needs 2ms to ~~move~~ ~~trans~~ move data, it has errors.

ii) Application Layer vs physical Layer:

Application layer:- it provides access to the network using applications (browser, email, ---) ex:- HTTP, FTP.

physical layer:- it turn digital signals ~~to~~ outgoing to messages to digital used ~~the~~ ~~at~~ media that attached ~~to~~ to Nic card.

iii) HTTP vs FTP:

HTTP:- Hyper text transfer protocol.

FTP:- File transfer protocol.

B) (5%)

Explain your understanding of the following terms giving also an example

WAN: wide area network :- it covers a large geographical areas, it cross many ~~countries~~ ~~on the internet~~ such as the ~~Internet~~ ^{Internet}

Protocol : set of rules control way two entities (devices, applications, --) communicating with each other.

C) (6%)

What do each of the following acronyms stand for?

LAN: Local Area Network DNS: Domain Name System