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CSE -101 Midterm Exam

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Question-1 Answer

Arithmetic logic unit (ALU) and the logic unit of the CPU, both of them calculates the arithmatical and logical units, where the Arithmatic units performs mathematical operations which are addition, subtractation, multiplication and division. They only perform these four actions. It represents the fundamental building blocks of the central processing unit (CPU) of a computer.

The logical unit of the CPU performs all the logical evaluations.

For eg; $(>,<, =, != , and, or, xor)$

The Four basic arithmetic operations using only addition:-

① Subtraction/Negative Addition:-

$$10 - 7 = 3$$
$$\therefore 10 + (-7) = 3 \quad (\text{Negative Addition})$$

② Multiplication/successive Addition:-

$$10 \times 6 = 60$$
$$\therefore 10 + 10 + 10 + 10 + 10 + 10 = 60$$

③. Division/successive subtraction/successive negative addition :—

$45 \div 15 = 3$
$45 - 15 = 30$
$30 - 15 = 15$
$15 - 15 = 0 \ (3)$

④ $a = 5$ $(a > 0 \text{ and } b < 10) \ T$
$\quad b = 7$
$(a > b) \Rightarrow$ False $(a > 0 \text{ and } b > 9) \ F$
$(a = b) \Rightarrow$ True $(a > 0 \text{ or } b < 9) \ T$
$(a < b) \Rightarrow$ true
$(a ! = b) \Rightarrow$ true $(a > 0 \text{ xor } b > 9) \ T$

$(a > 0 \text{ xor } b < 9) \ F$

Xor — exactly one true,
and -2 true if only one
& appears correct.

(b). $(23.6875)_{10}$ to binary

carry

$0.6875 \times 2 = 1.375$ 1

$0.375 \times 2 = 0.75$ 0

$0.75 \times 2 = 1.5$ 1

$0.5 \times 2 = 1.00$ 1

$\therefore (23.6875)_{10} \rightarrow (23.1011)_2$

(c). $(110011 \cdot 110011)_2$ to decimal

6	5	4	3	2	1	0	-1	-2	-3	-4	-5	-6
64	32	16	8	4	2	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{32}$	$\frac{1}{64}$
1	1	0	0	1	1	1	1	1	0	0	1	1

$(110011 \cdot 110011)_2 \rightarrow (1 \times 32 + 16 \times 1 + 8 \times 0 + 4 \times 0 + 2 \times 1 + 1 \times 1 \cdot$

$1 \times \frac{1}{2} + 1 \times \frac{1}{4} + 0 \times \frac{1}{8} + 0 \times \frac{1}{16} +$

$1 \times \frac{1}{32} + 1 \times \frac{1}{64})$

$= (51 \cdot 0.796875)_{10}$

(a) $(456)_8$ to Hexadecimal

6	5	4	3	2	1	0	-1	-2	-3
8	8	8	8	8	8	8	8	8	8

↓   ↓ 4096 512 64 8 1 $\frac{1}{8}$ $\frac{1}{16}$ $\frac{1}{512}$

262144 32768

$$4 \quad 5 \quad 6$$

$$(456)_8 = (4 \times 64 + 5 \times 8 + 6 \times 1)$$

$$= (302)_{16}$$

$$(456)_8 \rightarrow (?)_{16}$$

$$3 \quad 4 \quad 5$$

0011 0100 0101

0011 0100 0101

5

8 4 2 1
0 1 0 1

Question-3

(a) ~~Youtube — Software types mobile, computer, laptop, hardware~~

Youtube :—

Hardware — computer, laptop, mobile, tablet, etc.

Software — google play store, android app, apple store, gmail access, etc.

user — students, user, teacher, office administration.

(b) Retail software :—

Hardware — memory, memory card, accounting file, desktop, laptop, etc.

Software — Account Edge, Google Docs, Oracle, etc.

User — accountant, officers, businessman, administrators, etc.

Question - 4
Healthcare

When it comes to ~~computer~~ healthcare, the computer plays a major role in this sector.

Diagnosis — they are used for scanning of X-Rays, they are used for MRI and CT scan which is the scanning of the brains or which determines the activity of the brain.

Patient monitoring — they are used to monitor ~~the~~ any abnormality in ~~sy~~ signs in a patient ~~to determine~~ cardio in cases of cardiac arrest, ECG, etc.

Pharma Information System — they are used to test the drug level in a person or a product, to check expiary dates, harmful side effects, etc.

Specialised computers are used to determine the eye condition of a patients and it is also used to ~~complex~~ perform lasic surgeries.

Question-4

Healthcare

Diagnosis - computers are used for scanning, for X-Rays, it is used for MRI and for CT Scan.

Patient Monitoring - These are used to check the patients signs of abnormality such as in cardiac arrest, ECG, etc.

Pharma Information System - Computers are used to check drug level in a person or in a product, expiry dates, harmful side effects, etc.

Specialised computers are used to determine the eye condition of a person and it is also used to perform laser surgeries.