Victoria University
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MID Term Assessment

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Answer to the question no 1(a)

a) Define DLD:- Digital logic Design is the process of designing and implementing digital circuits using various electronic components and logical operations. These digital circuits process binary information to perform specific task, make decisions, or execute algorithms. Digital logic design forms the foundation of modern digital systems, including computers, microcontrollers, communication devices and more.

#Fields of Digital logic design.

① Digital integrated circuit design.
② Field - programmable Gate array design
③ application specific integrated circuit design.
④ Digital system design
⑤ computer architecture
⑥ Digital signal processing
⑦ control system design
⑧ Digital communication system.

Answer to the question NO 1(b)

Ans: Advantages of DLD

High accuracy and precision
Ease of replication and storage
Low signal loss
Noise Immunity
Logical operations
Ease of integration.
Flexibility and reconfigurability.
Ease of debugging
Design automation
Low power consumption

Answer to the question NO 2(a)

a) $(715)_{10} = ?_8$

8 | 715
8 | 89 – 3
8 | 11 – 1
8 | 1 – 3
0 – 1

8) 715 (89
64
x5
72
3

8) 89 (11
8
9
8
1

8) 11 (1
8
3

$\therefore (715)_{10} = (1313)_8$ Ans.

Answer to the question NO 2(b)

b) $(AC09)_{16} = ?_{10}$

AC09
- 9×16^0
- 0×16^1
- 12×16^2
- 10×16^3

$(AC09)_{16} = (10 \times 16^3) + (12 \times 16^2) + (0 + 16^1) + (9 \times 16^0)$

$= 40960 + 3072 + 9$

$= (44041)_{10}$ Ans.

Answer to the question no 2(c)

c) $(100011)_2 = ?_{10}$

$(100011)_2 = (1\times2^5) + (0\times2^4) + (0\times2^3) + (0\times2^2) + (1\times2^1) + (1\times2^0)$

$= 32 + 2 + 1$

$= (35)_{10}$

$\therefore (100011)_2 = (35)_{10}$ Ans.

Answer to the question no 2(d)

d) $(12435)_8 = ?_{10}$

$(12435)_8 = (1\times8^4) + (2\times8^3) + (4\times8^2) + (3\times8^1) + (5\times8^0)$

$= 4096 + 1024 + 256 + 24 + 5$

$= (5405)_{10}$

$\therefore (12435)_8 = (5405)_{10}$ Ans.

3 a) Define with example of LSB & MSB.

LSB :- "Least significant bit" is the bit position in a binary integer giving the units value, that is, determining whether the number is even or odd. The LSB is sometimes referred to as the low order bit or right-most bit.

Ex:- 10010101
↑
LSB

MSB : "most significant byte" the meaning is parallel to the above. it is the byte in that position of a multi-byte number which has the greatest value.

Ex : 10010101
↑
MSB

Answer to the question 3(b)

i) $(37)_{10} = ?_6$

6 | 37	6) 37 (6	6) 6 (1
6 | 6 — 1	36	6
6 | 1 — 0	1	0
0 — 1		

$\therefore (37)_{10} = (101)_6$ Answer.

ii) $(53)_6 = ?_{10}$

$(53)_6 = (5 \times 6^1) + (3 \times 6^0)$

$= 30 + 3$

$= (33)_{10}$

$\therefore (53)_6 = (33)_{10}$

iii) $(10762)_8 = ?_{16}$

octal to binary

$(10762)_8 = (001000111110010)_2$

then binary to Hexadecimal

0001 = 1
0001 = 1 4 bits group.
1111 = F
0010 = 2

$\therefore (10762)_8 = (11F2)_{16}$

(iv) $(AB9EF)_{16} = ?_8$

step1 Hexadecimal to binary

A → 1010

B → 1011

9 → 1001

E → 1110

F → 1111

$(AB9EF)_{16} = (10101011100111101111)_2$

step 2 - Binary to octal

010 → 2

101 → 5

011 → 3

100 → 4 3 bit group

111 → 7

101 → 5

111 → 7

$(10101011100111101111)_2 = (2534757)_8$

$\therefore (AB9EF)_{16} = (2534757)_8$ Ans.

>>>>>>END<<<<<<