18 Jul Assignment

Q.4

Q) 1.56, 2.34, 3.65, 4.103, 5.97

1) 1.56 :-

convert integral to binary.

0	0	0	0	0	0	0	0
2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1
0	0	0	0	0	0	0	1

$= 1(1)_2$.

Convert fractional to binary :-

0.56×2 = 1.12	1
0.12×2 = 0.24	0
0.24×2 = 0.48	0
0.48×2 = 0.96	0
0.96×2 = 1.92	1
0.92×2 = 1.84	1
0.84×2 = 1.68	1
0.68×2 = 1.36	1
0.36×2 = 0.72	0
0.72×2 = 1.44	1
0.44×2 = 0.88	0
0.88×2 = 1.76	1
0.76×2 = 1.52	1
0.52×2 = 1.04	1
0.04×2 = 0.8	0
0.8×2 = 0.6	0
0.6×2 = 1.2	1
0.2×2 = 0.4	0
0.4×2 = 0.8	0
0.8×2 = 1.6	1
0.6×2 = 1.2	1
0.2×2 = 0.4	0
0.4×2 = 0.8	0

$(1.10001111010101111011001100)_2$

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2) 2.34 :-

0	0	0	0	0	0	0	0
2^7	2^6	2^5	2^4	2^3	2^2	2^1	0
128	64	32	16	8	4	2	1

binary equivalent of $2 \rightarrow 10$

converting fractional into binary.

$0.34 \times 2 = 0.68$	0
$0.68 \times 2 = 1.36$	1
$0.36 \times 2 = 0.72$	0
$0.72 \times 2 = 1.44$	1
$0.44 \times 2 = 0.88$	0
$0.88 \times 2 = 1.76$	1
$0.76 \times 2 = 1.52$	1
$0.52 \times 2 = 1.01$	1
$0.04 \times 2 = 0.08$	0
$0.08 \times 2 = 0.16$	0
$0.16 \times 2 = 0.32$	0
$0.32 \times 2 = 0.64$	0
$0.64 \times 2 = 1.28$	1
$0.28 \times 2 = 0.56$	0
$0.56 \times 2 = 1.12$	1
$0.12 \times 2 = 0.24$	0
$0.24 \times 2 = 0.48$	0
$0.48 \times 2 = 0.96$	0
$0.96 \times 2 = 1.92$	1
$0.92 \times 2 = 1.84$	1
$0.84 \times 2 = 1.68$	1
$0.68 \times 2 = 1.36$	1
$0.36 \times 2 = 0.72$	0

combine both

$(10.0101011100001010001111100)_2$ is equivalent of 2.34.

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3. 3.65

0	0	0	0	0	0	0	0
2^8	2^7	2^6	2^5	2^4	2^3	2^2	2^1
128	64	32	16	8	4	2	1
	→	0	0	0	1	1	

binary equivalat.

convert fractional into binary.

1	$0.65 \times 2 = 1.3$	1
2	$0.3 \times 2 = 0.6$	0
3	$0.6 \times 2 = 1.2$	1
4	$0.2 \times 2 = 0.4$	0
5	$0.4 \times 2 = 0.8$	0
6	$0.8 \times 2 = 1.6$	1
7	$0.6 \times 2 = 1.2$	1
8	$0.2 \times 2 = 0.4$	0
9	$0.4 \times 2 = 0.8$	0
10	$0.8 \times 2 = 1.6$	1
11	$0.6 \times 2 = 1.2$	1
12	$0.2 \times 2 = 0.4$	0
13	$0.4 \times 2 = 0.8$	0
14	$0.8 \times 2 = 1.6$	1
15	$0.6 \times 2 = 1.2$	1
16	$0.2 \times 2 = 0.4$	0
17	$0.4 \times 2 = 0.8$	0
18	$0.8 \times 2 = 1.6$	1
19	$0.6 \times 2 = 1.2$	1
20	$0.2 \times 2 = 0.4$	0
21	$0.4 \times 2 = 0.8$	0
22	$0.8 \times 2 = 1.6$	1
23	$0.6 \times 2 = 1.2$	1

combine both

$(11.\overline{0100110011001100})_2$

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4) 4.103

0	0	0	0	0	0	0	0
128	64	32	16	8	4	2	1

binary equivalent. → 0 0 1 0 0

convert fractional into to binary.

0.103 x 2 = 0.206	0
0.206 x 2 = 0.412	0
0.412 x 2 = 0.824	0
0.824 x 2 = 1.648	1
0.648 x 2 = 1.296	1
0.296 x 2 = 0.592	0
0.592 x 2 = 1.184	1
0.184 x 2 = 0.368	0
0.368 x 2 = 0.736	0
0.736 x 2 = 1.472	1
0.472 x 2 = 0.944	0
0.944 x 2 = 1.888	1
0.888 x 2 = 1.776	1
0.776 x 2 = 1.552	1
0.552 x 2 = 1.104	1
0.104 x 2 = 0.208	0
0.208 x 2 = 0.416	0
0.416 x 2 = 0.832	0
0.832 x 2 = 1.664	1
0.664 x 2 = 1.328	1
0.328 x 2 = 0.656	0
0.656 x 2 = 1.312	1
0.312 x 2 = 0.624	0

$(100.0001101\ 0010\ 1111\ 0001\ 1010)_2$

4.103

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5] 5.97

0	0	0	0	0	0	0	0
128	64	32	16	8	4	2	1
0	0	0	0	0	1	0	1

convert fractional into binary.

0.97 x 2 = 1.94	1
0.94 x 2 = 1.88	1
0.88 x 2 = 1.76	1
0.76 x 2 = 1.52	1
0.52 x 2 = 1.04	1
0.04 x 2 = 0.08	0
0.08 x 2 = 0.16	0
0.16 x 2 = 0.32	0
0.32 x 2 = 0.64	0
0.64 x 2 = 1.28	1
0.28 x 2 = 0.56	0
0.56 x 2 = 1.12	1
0.12 x 2 = 0.24	0
0.24 x 2 = 0.48	0
0.48 x 2 = 0.96	0
0.96 x 2 = 1.92	1
0.92 x 2 = 1.84	1
0.84 x 2 = 1.68	1
0.68 x 2 = 1.36	1
0.36 x 2 = 0.72	0
0.72 x 2 = 1.44	1
0.44 x 2 = 0.88	0
0.88 x 2 = 1.76	1

combine both

$(101.11110000101000111101 01)_2$

5.92

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