

Program 4: Write the binary number of the following decimal numbers.

① 1.56

Calculate the binary no of digit before decimal point and then the binary no of digit after decimal point and then combine both binary nos to get binary no of given decimal.

a) 1

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-वां स्टोरेज digit
find कर (nearest
smaller/equal)
make that bit 1.

1 → 0001

b) $0.56 \times 2 = 1.12 \rightarrow 1$

$0.12 \times 2 = 0.24 \rightarrow 0$

$0.24 \times 2 = 0.48 \rightarrow 0$

$0.48 \times 2 = 0.96 \rightarrow 0$

∴ $0.56 \rightarrow 1000$

∴ $1.56 \rightarrow 0001.1000 \dots$

② 2.34

a) 2

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 1 0

2 → 0010

b) $0.34 \times 2 = 0.68 \rightarrow 0$
 $0.68 \times 2 = 1.36 \rightarrow 1$
 $0.36 \times 2 = 0.72 \rightarrow 0$
 $0.72 \times 2 = 1.44 \rightarrow 1$ ↓

$0.34 \rightarrow 0101----$

$2.34 \rightarrow 0010.0101----$

③ 3.65

a) 3

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 1 1

$3 \rightarrow 00011$

$3.65 \rightarrow 0011.1010----$

b) $0.65 \times 2 = 1.30 \rightarrow 1$

$0.30 \times 2 = 0.60 \rightarrow 0$

$0.60 \times 2 = 1.20 \rightarrow 1$

$0.20 \times 2 = 0.40 \rightarrow 0$ ↓

$0.65 \rightarrow 1010---$

④ 4.103

a) 4

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 1 0 0

$4 \rightarrow 0100$

$4.103 \rightarrow 0100.0001----$

$0.103 \times 2 = 0.206 \rightarrow 0$

$0.206 \times 2 = 0.412 \rightarrow 0$

$0.412 \times 2 = 0.824 \rightarrow 0$

$0.824 \times 2 = 1.648 \rightarrow 1$ ↓

$0.103 \rightarrow 0001----$

⑤ 5.97

a) 5

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 1 0 1

$5 \rightarrow 0101$

$0.97 \times 2 = 1.94 \rightarrow 1$

$0.94 \times 2 = 1.88 \rightarrow 1$

$0.88 \times 2 = 1.76 \rightarrow 1$

$0.76 \times 2 = 1.52 \rightarrow 1$

$0.97 \rightarrow 1111----$

$5.97 \rightarrow 0101.1111----$