

Question 25-

a) (i) Truth table.

Input A	Input B	Carry	Sum	output
0	0	0	0	0
0	1	0	1	1
1	0	0	1	1
1	1	1	1	1

(ii) Full adder can be constructed with 2 halfadders and an OR gate.



b) floating point represents fractional number using exponent functions consisting of a mantissa and ~~and~~ an exponent.

S EEEEEEE FFFFFF
 ↑ } ↑
 sign exponent. mantissa
 whether
 positive
 or negative Eg. 1 000111 000000
 S. E M

sign is negative (1)

$$\therefore -2^{(E-127)} \times 1.F$$

$$-2^{(11-127)} \times 1.0.$$

Integer representation represents fractions in decimal numbers.

e.g. 1.00100

$$1 + \frac{1}{2} \frac{1}{4} \left(\frac{1}{8} \right)$$

Q(i)

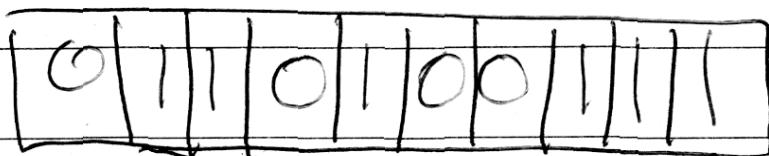


Bits X movement

X direction

0 for left

1 for right



Y direction

0 for down

1 for up

(ii)

$$\begin{array}{r}
 0110110010 \\
 0110100111 \\
 \hline
 110001100
 \end{array}$$

110  110000100