1. (i) (1100001)2 – (101010)2 = (110111)2

(ii) (110101)2 + (1001011)2 = (10000000)2

(iii) (1111)2 – (1001)2 = (110)2

2. (i) (24.4)10 = (11000.01100110)2

(ii) (1101.01)2 = (13.25)10

(iii) (C6)16 = (198)10

3. (i) (126)10 – (67)10

(126)10 = (01111110)2

(67)10 = (01000011)2

01000011 ------ +67

10111100 ------ 1’s complement

+ 1 ------ 1 added

10111101 ------ 2’s complement

(-67)10 = (10111101)2

Therefore , the subtraction 126 – 67 can be replaced by the addition of 126 + (- 67).

01111110

+10111101

100111011

Since the bit number is 8, the 9th digit resulting from the carry is ignored.

Ans. (111011)2 or (59)10

(ii) (58)10 – (127)10 = (198)10

(58)10 = (111010)2

(127)10 = (1111111)2

01111111 ------ +127

10000000 ------ 1’s complement

+ 1 ------ 1 added

10000001 ------ 2’s complement

(-127)10 = (10000001)2

Therefore , the subtraction 58 - 127 can be replaced by the addition of 58 + (- 127).

10000001

+ 00111010

10111011 ------- the result is negative.

-1

10111010 ------- 1 subtracted

01000101 ------- All the “0” and “1” bits of the original bit string are switched.

Ans. (10111011)2 or (-69)10