Answer to the question no. 2

(a) Haming Distance Calculation:

$(11110000, 00001101) = 7$

$(11110000, 10111010) = 3$

$(11110000, 01110111) = 4$

$(00001101, 10111010) = 6$

$(00001101, 01110111) = 5$

and $(10111010, 01110111) = 5$

∴ Minimum Haming distance = 3

∴ Error direction $d_{min} = S + 1$

$$\Rightarrow 3 = S + 1$$

$$\therefore S = 2$$

The coding scheme can detect 2 bit error

Now for Correction:

$$d_{min} = 2t + 1$$

$$\Rightarrow 3 = 2t + 1 \qquad \therefore t = 1$$

∴ The coding scheme can correct upto 1 bit.

(b) The original data can be corrected to retrive as the scheme can correct upto 1 bit error.