سؤال ۳ الف)

$29 + 21 = 50$ $a = -29 - 21$

$-29 - 21 = 50$ $y = 29 + 21$

$A = -29$ $A + B = (-29) + (-21)$

$B = -21$

$(29)_{10} = (011101) \rightarrow (-29)_{10} = (100011)_2$ **+2**

$(21)_{10} = (010101) \rightarrow (-21)_{10} = (101011)$ **+2**

$$D = A + B : \begin{array}{r} ^1 \quad ^{11} \\ 100011 \\ 101011 \; + \end{array}$$

+1

over flow سرریز

$(1)\;001110 \rightarrow -D$ **+4**

2's comp

$D = (110010)_2 = (-50)_{10}$

$C = 29 \rightarrow 29 + 21 = 50 \rightarrow C = (011101)_2$

$E = 21$ → $E = (010101)_2$

$$C + E \Rightarrow 1 \begin{array}{r} ^{111}\;^1 \\ 011101 \\ 010101 \; + \end{array}$$

$\cancel{0} 1 \;(110010)_2 = (50)_{10}$ **+4**

ید (11001001)gray ب)

+4

$$1 \quad 1 \quad 0 \quad 0 \quad 1 \quad 0 \quad 0 \quad 1$$
$$\downarrow \oplus \downarrow \oplus \downarrow \oplus \downarrow \oplus \downarrow \oplus \downarrow \oplus \downarrow \oplus \downarrow$$
$$1 \quad 0 \quad 0 \quad 0 \quad 1 \quad 1 \quad 1 \quad 0$$

$$(11001001)_{gray} = (10001110)_{binary}$$

+4

$$(11001001)_{bin} = (?)_{gray}$$ ج)

$$1 \xrightarrow{\oplus} 1 \xrightarrow{\oplus} 0 \xrightarrow{\oplus} 0 \xrightarrow{\oplus} 1 \xrightarrow{\oplus} 0 \xrightarrow{\oplus} 0 \xrightarrow{\oplus} 1$$
$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$
$$1 \quad 0 \quad 1 \quad 0 \quad 1 \quad 1 \quad 0 \quad 1$$

$$(11001001)_{bin} = (10101101)_{gray}$$

○ مثال ۳) (۱۱۰۰۱۰۰۱)

+8

Hamming →

$$P_1 \quad P_2 \quad P_4 \quad P_8$$
$$1 \quad 1 \quad 1 \quad 0 \quad 1 \quad 0 \quad 0 \quad 0 \quad 1 \quad 0 \quad 0 \quad 1$$

→ $P_1 = 1$ تعداد ۱ فرد

$P_2 = 1$ ← تعداد ۱ فرد

$0 = P_4$ ← تعداد ۱ زوج

تعداد یک زوج

$P_8 = 0$

⇒ Hamming code: (111010001001)

Hamming

$(473406.12234)_8 = (?)_{16}$ (جـ)

$= (4\ 7\ 3\ 4\ 0\ 6\ .\ 1\ 2\ 2\ 3\ 4)_8$

$= (100\ 111\ 011\ 100\ 000\ 110\ .\ 001\ 010\ 010\ 011\ 100)$

$= (4\ 7\ 7\ 0\ 6\ .\ 2\ 9\ 3\ 8)_{16}$

$= (47706.2938)_{16}$

+7