۴۰۳۱۰۵۷۹۳ شماره دانشجویی : آرون نقال اصل

تمرین اول : آزمون ورودی تقل :

بخش اول :

I) $31_x - 3 = 23_x \rightarrow 3x+1-3 = 2x+3 \rightarrow$
$3x - 2x = 6 - 1 \rightarrow x = 5$

II) $(8AB)_y + (32C)_y = (C0A)_y \rightarrow$
$8y^2 + 10y + 11 + 3y^2 + 2y + 12 = 12y^2 + 0 \times y + 10 \rightarrow$
$y^2 - 12y - 13 = 0 \rightarrow \begin{cases} y = -1 \ \times \\ y = 13 \end{cases} \rightarrow y = 13$
$(y-13)(y+1) = 0$
$13 > 12 \checkmark$

III) $(3 \times 42_z + 321_z) \times 12_z = 11212_z \rightarrow$
$((3 \times (4z+2)) + 3z^2 + 2z + 1) \times (z+2) = (z^4 + z^3 + 2z^2 + z + 2)$
$(3z^2 + 14z + 7)(z+2) = z^4 + z^3 + 2z^2 + z + 2 \rightarrow$
$3z^3 + 20z^2 + 35z + 14 = z^4 + z^3 + 2z^2 + z + 2 \rightarrow$
$z^4 - 2z^3 - 18z^2 - 34z - 12 = 0 \rightarrow$
$(z-6)(z^3 + 4z^2 + 6z + 2) = 0 \rightarrow z = 6$ ✓

بخش دوم :

I) $(22100220)_3 = (?)_9 = (8326)_9$

II) $(123321)_4 = (?)_{16} = (6F9)_{16}$

III) 0503724 = 0b? = 0b101 000 011 111 010 100

IV) 0b 1100 1010 1111 00 = 0x? = 0x32BC

V) $(431022)_5 = (?)_9 \rightarrow 4 \times 5^5 + 3 \times 5^4 + 1 \times 5^3 + 0 \times 5^2 + 2 \times 5 + 2 =$
$12500 + 1875 + 125 + 10 + 2 = 14512 = (21814)_9$

آوین تبال امل :

نمونه سوم :

I) ((0x24 ROTL 2) ∨ (0b100110 ∧ 12)) ⊕ 0172 (octal)

ROTL2: 00100100 → 10010000

∧: 00100110 ∧ 00001100 = 00000100

10010000 ∨ 00000100 = 10010100

→ 10010100 ⊕ 01111010 =

00010010 = 18 ← ~ 11101101 ← -1 11101110 = -18

II) ((0b110101 ROTR3) ∧ (0xA7 ∨ 0b10101)) ⊕ (0xF3 ROTL 1) =

ROTR3: 00110101 → 10100110

∨: 10100111 ∨ 00010101 = 10110111

∧: 10100110 ∧ 10110111 = 10100110

ROTL1: 1111 0011 → 11100111

→ 10100110 ⊕ 11100111 = 01000001 =

$2^6 + 1 = 65$

III) ((0x3A >>2) ∧ (0b10011001 ROTL 1)) ⊕ (0xC7 <<1) =

>>2: 0011 1010 → 0000 1110

ROTL1: 00110011

∧: 00000010

<<1: 1100 0111 → 10001110

→ 00000010 ⊕ 10001110 = 10001100

- 1

10001011 = -116

not: 01110100

= 64 + 32 + 16 + 4 = 116