

# SORU 1

$$a) (10110110)_2 = -010\ 110\ 110 = (266)_8$$

$$-0x2^0 + 1x2^1 + 1x2^2 + 0x2^3 + 1x2^4 + 1x2^5 + 0x2^6 + 1x2^7 = 0 + 2 + 4 + 0 + 16 + 32 + 0 + 128 = (182)_{10}$$

$$- \frac{1011}{8} \frac{0110}{6} = (B6)_{16}$$

$$b) (14392)_{10} = (?)_2$$

$$\begin{array}{r} 2 \overline{) 14392} \\ \underline{1440} \\ 92 \\ \underline{88} \\ 4 \\ \underline{4} \\ 0 \end{array} \quad \begin{array}{r} 2 \overline{) 899} \\ \underline{880} \\ 19 \\ \underline{18} \\ 1 \\ \underline{1} \\ 0 \end{array} \quad \begin{array}{r} 2 \overline{) 1799} \\ \underline{1798} \\ 1 \\ \underline{1} \\ 0 \end{array} \quad \begin{array}{r} 2 \overline{) 3598} \\ \underline{3596} \\ 2 \\ \underline{2} \\ 0 \end{array} \quad \begin{array}{r} 2 \overline{) 7196} \\ \underline{7192} \\ 4 \\ \underline{4} \\ 0 \end{array} \quad \begin{array}{r} 2 \overline{) 7196} \\ \underline{7192} \\ 4 \\ \underline{4} \\ 0 \end{array}$$

$$(14392)_{10} = (11100000111000)_2$$

$$(?)_8$$

$$(14392)_{10} = (34070)_8$$

$$\begin{array}{r} 8 \overline{) 34070} \\ \underline{32000} \\ 2070 \\ \underline{1600} \\ 470 \\ \underline{400} \\ 70 \\ \underline{64} \\ 6 \end{array}$$

$$(?)_{16}$$

$$(14392)_{10} = (3838)_{16}$$

$$\begin{array}{r} 16 \overline{) 34070} \\ \underline{32000} \\ 2070 \\ \underline{1600} \\ 470 \\ \underline{400} \\ 70 \\ \underline{64} \\ 6 \end{array}$$

$$c) (10CE)_{16} = (?)_2$$

$$(10CE)_{16} = (0001\ 0000\ 1100\ 1110)_2$$

$$(10CE)_{16} = (?)_8$$

Hex to Binary (0001 0000 1100 1110)

Binary to octal (001 000 011 001 110)

0 1 0 3 1 6

$$(10CE)_{16} = (010816)_8$$



$$(10CE)_{16} = (2)_8$$

$$E \times 16^0 + C \times 16^1 + 0 \times 16^2 + 1 \times 16^3 = 14 + 12 \times 16 + 0 + 4096 = 4302$$

SORU 2

$$a) (1010, 011)_2 = (2)_8$$

$$001 \ 010 \ . \ 011 = (12,3)_8$$

$$(1010, 011)_2 = (2)_{10}$$

$$0 \times 2^0 + 1 \times 2^1 + 0 \times 2^2 + 1 \times 2^3 + 0 \times 2^{-1} + 1 \times 2^{-2} + 1 \times 2^{-3} = 0 + 2 + 0 + 8 + 0 + 1/4 + 1/8 = (10,375)_{10}$$

$$(1010, 011)_2 = (2)_{16}$$

$$\frac{1010}{A} \ , \ \frac{0110}{6} = (A,6)_{16}$$

$$b) (156,341)_8 = (2)_2$$

her bezeichnen 2 mit femsil oder  $\rightarrow$

$$(001101110, 011100001)_2$$

$$(156,341)_8 = (2)_{10}$$

$$6 \times 8^0 + 5 \times 8^1 + 1 \times 8^2 + 3 \times 8^3 + 4 \times 8^4 + 1 \times 8^5 = 6 + 40 + 64 + 3 \times 118 + 4 \times 1164 + 1 \times 1152 = (110,439)_{10}$$

$$(156,341)_8 = (2)_{16}$$

$$(156,341)_8 = (001101110, 011100001)_2$$

$$\begin{array}{ccccccc} 0000 & 0110 & 1110 & 0111 & 0000 & 1000 \\ 0 & 6 & E & 7 & 0 & 8 \end{array}$$

$$(06E,708)_{16}$$

$$c) (531,031)_{10} = (2)_2$$

$$\begin{array}{r} 1 \\ 2 \overline{) 531} \\ \underline{4} \phantom{0} \\ 13 \phantom{0} \\ 10 \phantom{0} \\ \underline{8} \phantom{0} \\ 5 \phantom{0} \end{array} \quad \begin{array}{r} 2 \\ 4 \overline{) 13} \\ \underline{8} \phantom{0} \\ 5 \phantom{0} \end{array} \quad \begin{array}{r} 4 \\ 8 \overline{) 5} \\ \underline{4} \phantom{0} \\ 1 \phantom{0} \end{array} \quad \begin{array}{r} 8 \\ 16 \overline{) 1} \\ \underline{8} \phantom{0} \\ 3 \phantom{0} \end{array} \quad \begin{array}{r} 16 \\ 32 \overline{) 3} \\ \underline{16} \phantom{0} \\ 17 \phantom{0} \end{array} \quad \begin{array}{r} 32 \\ 64 \overline{) 17} \\ \underline{64} \phantom{0} \\ 17 \phantom{0} \end{array} \quad \begin{array}{r} 64 \\ 128 \overline{) 17} \\ \underline{128} \phantom{0} \\ 17 \phantom{0} \end{array} \quad \begin{array}{r} 128 \\ 256 \overline{) 17} \\ \underline{256} \phantom{0} \\ 17 \phantom{0} \end{array} \quad \begin{array}{r} 256 \\ 512 \overline{) 17} \\ \underline{512} \phantom{0} \\ 17 \phantom{0} \end{array}$$

$$(1000010011, 010)_2$$

$$\begin{array}{r} 0,124 \\ 2 \overline{) 0,248} \\ \underline{0,248} \\ 0 \end{array}$$

$$\begin{array}{r} 0,162 \\ 2 \overline{) 0,324} \\ \underline{0,324} \\ 0 \end{array}$$

$$\begin{array}{r} 0,1031 \\ 2 \overline{) 0,2062} \\ \underline{0,2062} \\ 0 \end{array}$$

$$(531,031)_{10} = (2)_8$$

$$\begin{array}{r} 0,984 \\ 8 \overline{) 7,872} \\ \underline{7,872} \\ 0 \end{array} \quad \begin{array}{r} 0,248 \\ 8 \overline{) 1,984} \\ \underline{1,984} \\ 0 \end{array} \quad \begin{array}{r} 0,031 \\ 8 \overline{) 0,248} \\ \underline{0,248} \\ 0 \end{array} \quad \begin{array}{r} 1 \\ 8 \overline{) 8} \\ \underline{8} \\ 0 \end{array} \quad \begin{array}{r} 8 \\ 64 \overline{) 66} \\ \underline{64} \\ 2 \end{array} \quad \begin{array}{r} 66 \\ 528 \overline{) 331} \\ \underline{331} \\ 0 \end{array}$$



$$(581.081)_{10} = (21)_{16}$$

$$213, 1490$$

$$\begin{array}{r} 01986 \\ 16 \\ \hline 5416 \\ 936 \\ \hline 14776 \end{array}$$

$$\begin{array}{r} 01496 \\ 16 \\ \hline 4976 \\ 496 \\ \hline 09936 \end{array}$$

$$\begin{array}{r} 01081 \\ 16 \\ \hline 0186 \\ 0031 \\ \hline 01496 \end{array}$$

$$\begin{array}{r} 16 \overline{) 33} \\ - 32 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 33 \\ 16 \overline{) 581} \\ - 48 \\ \hline 101 \\ - 96 \\ \hline 51 \\ - 48 \\ \hline 3 \end{array}$$

$$d) (21, 11)_{16} = (?)_2$$

her digit için 4 bitlik  $\rightarrow (21, 11)_{16} = (0010\ 0001, 0001\ 0001)_2$

$$(21, 11)_{16} = (?)_8$$

$$(21, 11)_{16} = (0010\ 0001, 0001\ 0001)_2$$

$$(0001\ 0001, 0001\ 0001)_2 \rightarrow (041, 042)_8$$

$$(21, 11)_{16} = (2)_{10}$$

$$0 \times 16^0 + 2 \times 16^1 + 1 \times 16^{-1} + 1 \times 16^{-2} = 33,0625$$

$$i) \text{ SORU 3}$$

$$(1011)_2 + (1110)_2 =$$

$$\begin{array}{r} 1011 \\ + 1110 \\ \hline 11001 \end{array}$$

$$iii) (1011)_2 - (1110)_2 = ?$$

$$\begin{array}{r} 1011 \\ - 1110 \\ \hline 10001 \end{array}$$

$$v) (2344)_8 + (2674)_8 =$$

$$\begin{array}{r} 2344 \\ + 2674 \\ \hline 6240 \end{array}$$

$$vii) (7451)_8 \times (6006)_8 =$$

$$\begin{array}{r} 7451 \\ \times 6006 \\ \hline 55366 \\ 00000 \\ 00000 \\ 00000 \\ \hline 55366 \end{array}$$

$$x) (1562)_{10} \times (4652)_{10}$$

$$\begin{array}{r} 1562 \\ \times 4652 \\ \hline 3124 \\ 7810 \\ 9332 \\ 6248 \\ \hline 7266424 \end{array}$$

$$vi) (7358)_{10} - (5689)_{10}$$

$$\begin{array}{r} 7358 \\ - 5689 \\ \hline 1669 \end{array}$$

$$ix) (7999)_{10} + (8862)_{10} =$$

$$\begin{array}{r} 7999 \\ + 8862 \\ \hline 16861 \end{array}$$

$$xi) (7563)_{10} / (32)_{10} =$$

$$\begin{array}{r} 7563 \\ \div 32 \\ \hline 236.34375 \end{array}$$

$$ii) (11, 01)_2 + (10, 10)_2 =$$

$$\begin{array}{r} 11.01 \\ + 10.10 \\ \hline 101.11 \end{array}$$

$$(77, 55)_8 + (33, 42)_8 =$$

$$\begin{array}{r} 77.55 \\ + 33.42 \\ \hline 111.17 \end{array}$$

$$\begin{array}{r} 236 \\ 32 \overline{) 7563} \\ - 64 \\ \hline 116 \\ - 96 \\ \hline 203 \\ - 192 \\ \hline 11 \end{array}$$



#### SORU 4

a)  $(52520)_{10}$  Sayısının taban-1 ve taban tümleyenlerini bulunuz

$$(10^5 - 1) - 52520 = 99899 - 52520 = 47479$$

$$(10^5 - 52520) = 47480$$

b)  $(15A2C)_{16}$  Sayısının taban-1 ve taban tümleyenlerini bulunuz