

(1)

### Example 16

Convert  $443.625_{10}$  TO OCTAL

$$\begin{array}{r|l} 8 & 443 \\ \hline 8 & 55 \text{ R } 3 \\ 8 & 6 \text{ R } 7 \\ & 0 \text{ R } 6 \end{array}$$

$$.625 \times 8 = \boxed{5}.0$$

$673.5_8$

Example 17 : Convert  $12483.046875_{10}$  TO OCTAL.

$$\begin{array}{r|l} 8 & 12483 \\ \hline 8 & 1560 \text{ R } 3 \\ 8 & 195 \text{ R } 0 \\ 8 & 24 \text{ R } 3 \\ 8 & 3 \text{ R } 0 \\ & 0 \text{ R } 3 \end{array}$$

$$.046875 \times 8 = \boxed{0}.375$$

$$.375 \times 8 = \boxed{3}.0$$

$30303.03_8$

(2)

Example 18

CONVERT  $443.625_{10}$  TO HEXADECIMAL

|   |  |     |   |   |
|---|--|-----|---|---|
| 8 |  | 443 |   |   |
| 8 |  | 55  | R | 3 |
| 8 |  | 6   | R | 7 |

Example 19

CONVERT  $12483.046875_{10}$  TO HEXADECIMAL

Example 18

CONVERT  $443.625_{10}$  TO HEXADECIMAL

|    |  |     |  |  |
|----|--|-----|--|--|
| 16 |  | 443 |  |  |
|----|--|-----|--|--|

|    |  |    |   |                    |
|----|--|----|---|--------------------|
| 16 |  | 27 | R | 11 $\rightarrow$ B |
|----|--|----|---|--------------------|

|    |  |   |   |                    |
|----|--|---|---|--------------------|
| 16 |  | 1 | R | 11 $\rightarrow$ B |
|----|--|---|---|--------------------|

|  |  |   |   |                   |
|--|--|---|---|-------------------|
|  |  | 0 | R | 1 $\rightarrow$ 1 |
|--|--|---|---|-------------------|

$.625 \times 16 = 10.0$

A

0

$1BB.A_{16}$

(3)

EXAMPLE 19 : CONVERT  $12483.046875_{10}$  TO  
HEXADECIMAL

$$\begin{array}{r|l} 16 & 12483 \\ \hline & 780 \\ 16 & 48 \\ \hline & 3 \\ 16 & 0 \end{array} \quad \begin{array}{l} R \quad 3 \rightarrow 3 \\ R \quad 12 \rightarrow C \\ R \quad 0 \rightarrow 0 \\ R \quad 3 \rightarrow 3 \end{array}$$

$$.046875 \times 16 = \boxed{0}.75 \quad \rightarrow \boxed{0}$$

$$.75 \times 16 = \boxed{12}.0 \quad \rightarrow \boxed{C}$$

$30C3.0C_{16}$

EXAMPLE 20

What octal number is represented by  
the binary number  $110111011.101_2$  ?

④

| <u>OCTAL</u> | <u>BINARY</u> |
|--------------|---------------|
| 0            | 000           |
| 1            | 001           |
| 2            | 010           |
| 3            | 011           |
| 4            | 100           |
| 5            | 101           |
| 6            | 110           |
| 7            | 111           |

SPLIT INTO GROUPS OF 3  
STARTING AT THE POINT

1 1 0 | 1 1 1 | 0 1 1 | . 1 0 1

↓ ↓ ↓ ↓ ↓  
6 7 3 . 5

READ OFF EACH GROUP OF  
3 FROM TABLE

673.5<sub>8</sub>

(5)

Example 21

CONVERT  $11000011000011.000011_2$  TO  
OCTAL.

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | . | 0 | 0 | 0 | 0 | 1 | 1 |
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 3 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 3 | . | 0 | 3 | 0 | 3 |   |   |   |   |   |   |   |   |

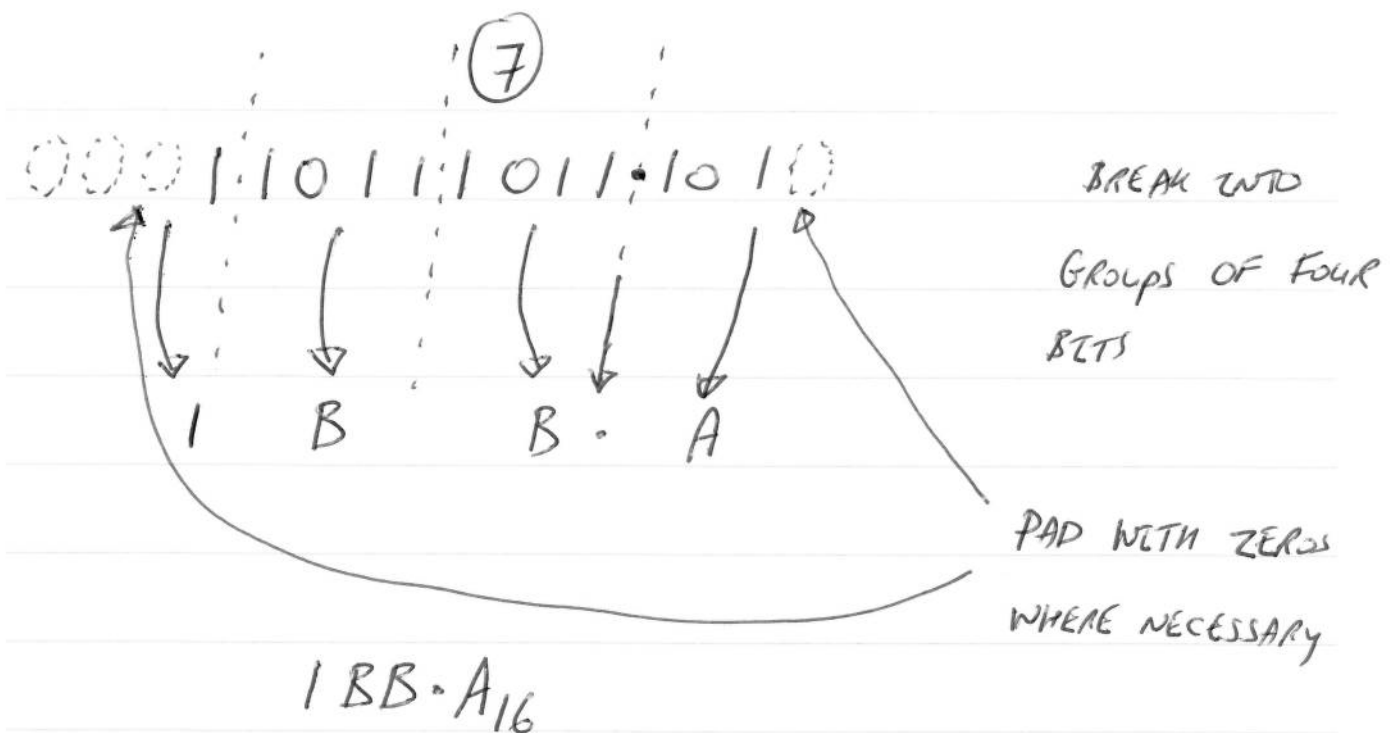
$30303.03_8$

⑥

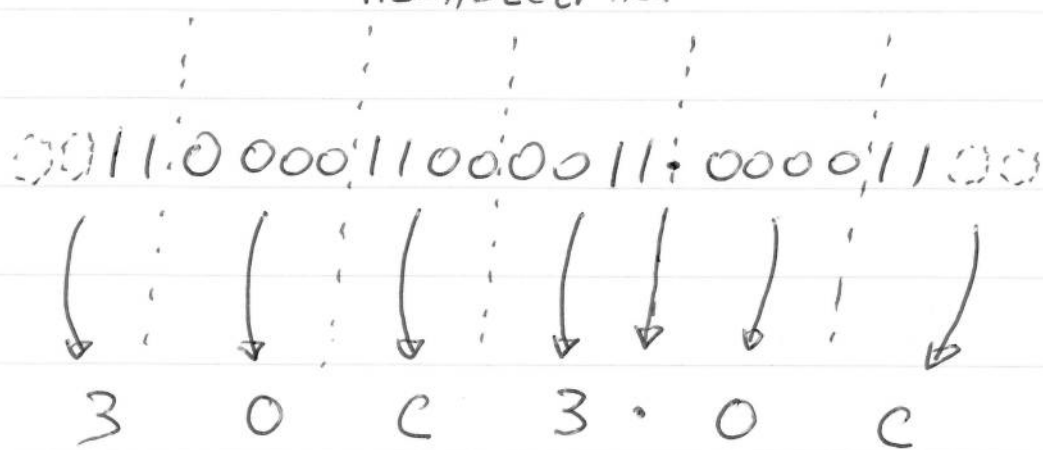
Example 22

What hexadecimal number is represented by  
 $110111011.101_2$

| <u>Hexadecimal</u> | <u>Binary</u> |
|--------------------|---------------|
| 0                  | 0000          |
| 1                  | 0001          |
| 2                  | 0010          |
| 3                  | 0011          |
| 4                  | 0100          |
| 5                  | 0101          |
| 6                  | 0110          |
| 7                  | 0111          |
| 8                  | 1000          |
| 9                  | 1001          |
| A                  | 1010          |
| B                  | 1011          |
| C                  | 1100          |
| D                  | 1101          |
| E                  | 1110          |
| F                  | 1111          |



Example 23: Convert  $110000011000011.000011_2$  TO  
HEXADECIMAL.

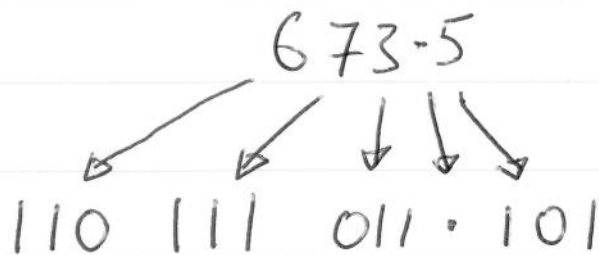


$30C3.0C_{16}$

(8)

### EXAMPLE 24

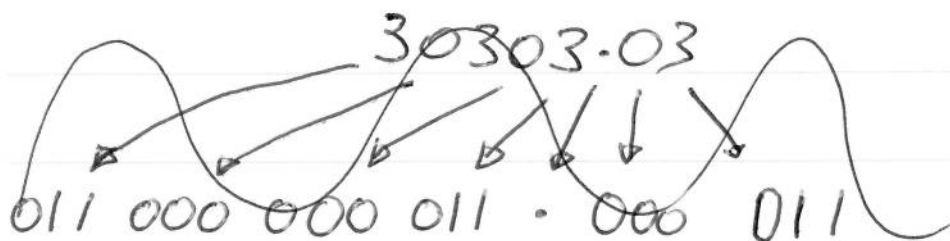
What binary number is represented by the octal number  $673.5_8$



$110111011.101_2$

### EXAMPLE 25

Convert  $30303.03_8$  to binary



30303.03

↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

011 000 011 000 011 . 000 011

11 000 011 000 011 . 000 011<sub>2</sub>

DROP  
LEADING/TRAILING  
ZEROS

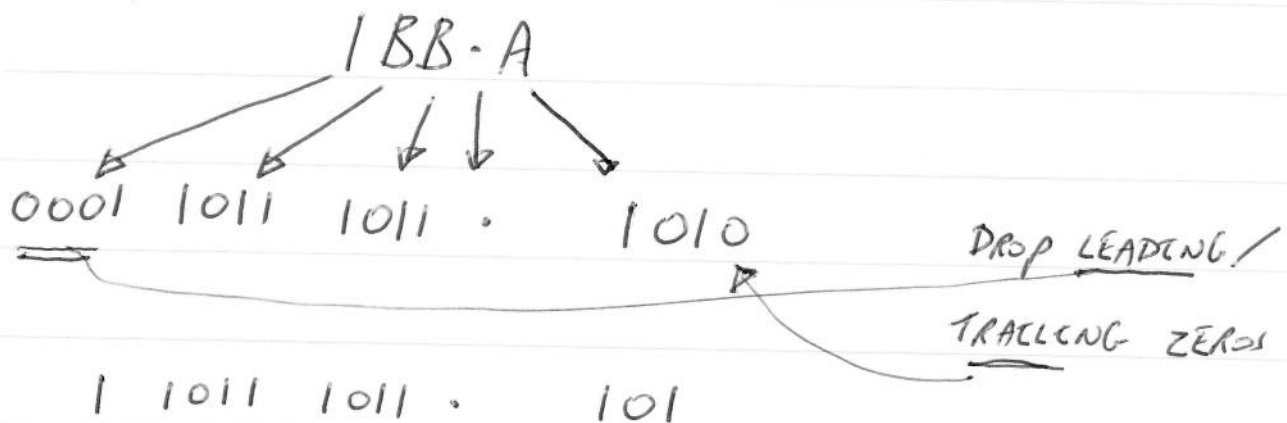


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### Example 26

What binary number is represented by the hexadecimal number  $1BB.A_{16}$

hex  $\rightarrow$  binary

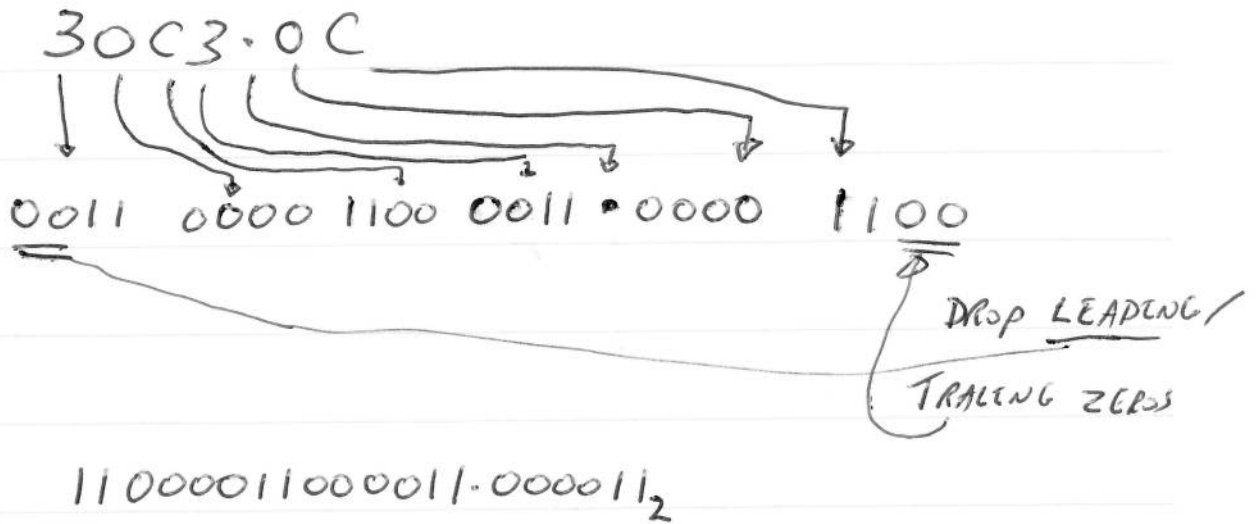


$110111011.101_2$

(10)

### EXAMPLE 27

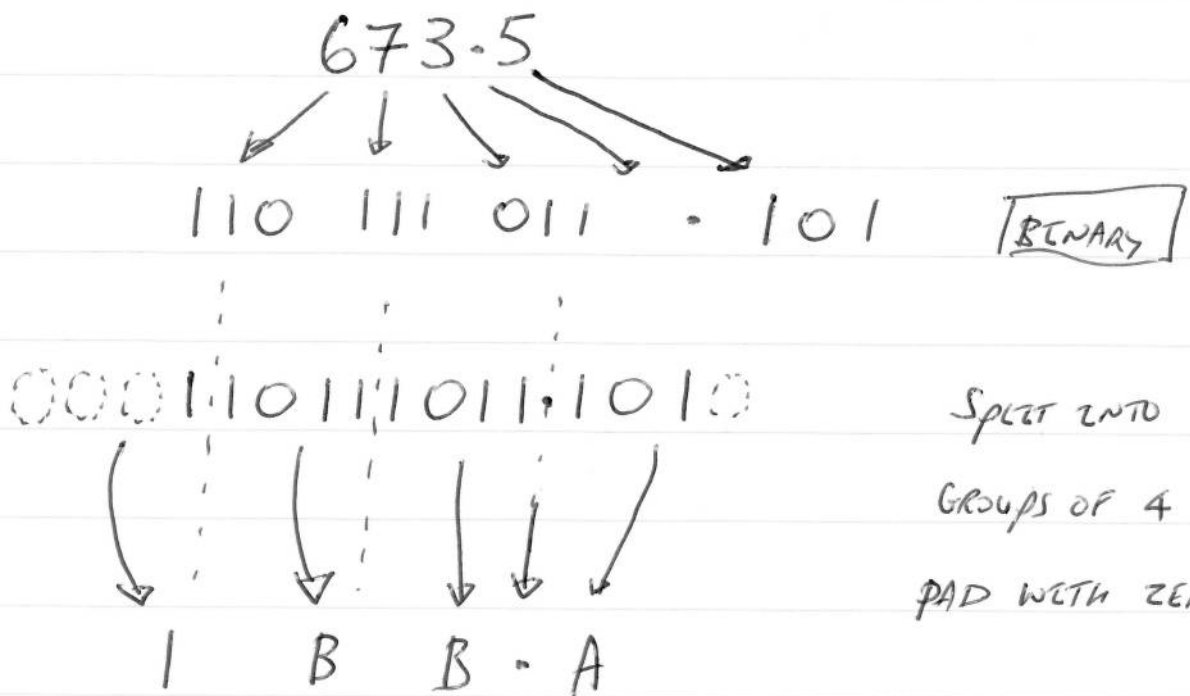
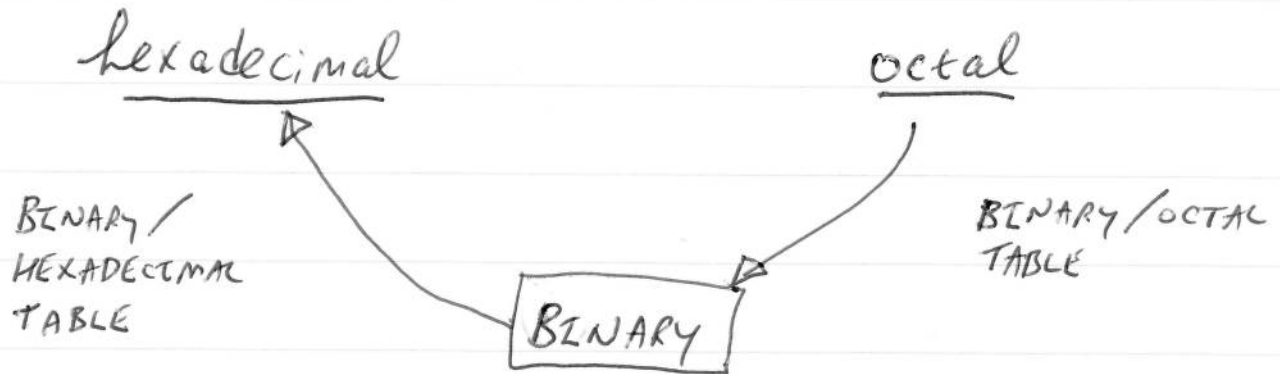
Convert  $30C3.0C_{16}$  to binary.



(11)

### Example 28

What hexadecimal no. is represented by  $673.5_8$



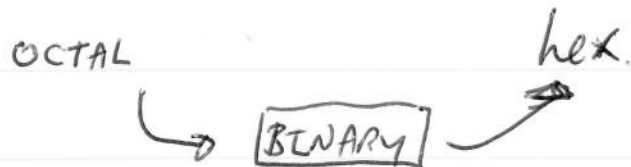
SPLIT INTO  
GROUPS OF 4 BITS.  
PAD WITH ZEROS

$1BB.A_{16}$

(12)

Example 29

CONVERT  $30303.03_8$  to hexadecimal



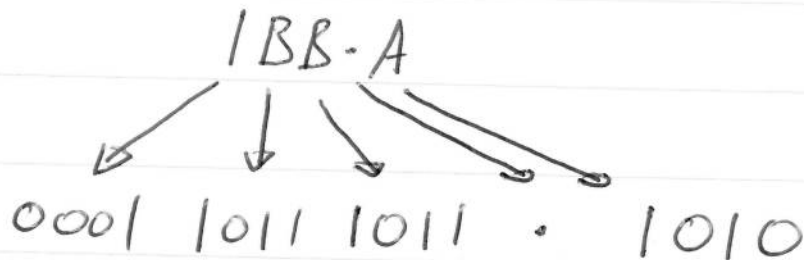
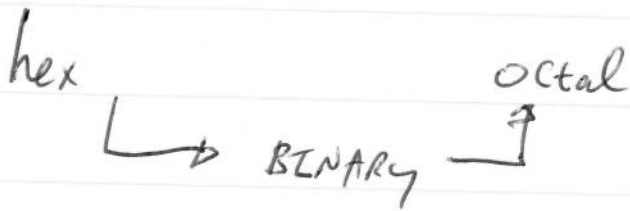
$30303.03$   
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$   
 $011\ 000\ 011\ 000\ 011 \cdot 000\ 011$  BINARY

$0011\ 0000\ 1100\ 0011 \cdot 0000\ 1100$  SPLIT INTO  
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$  GROUPS OF 4  
PAD WITH ZEROS  
 $3\ 0\ C\ 3 \cdot 0\ C$

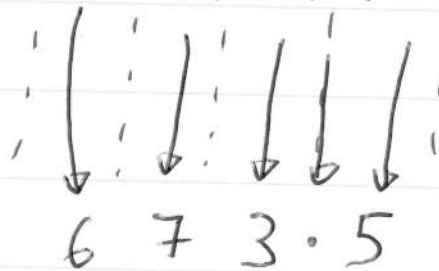
$30C3.0C_{16}$

(13)

Example 30: What octal number is represented by the hexadecimal no.  $1BB.A_{16}$



0001 1011 1011 . 1010



SPLIT INTO

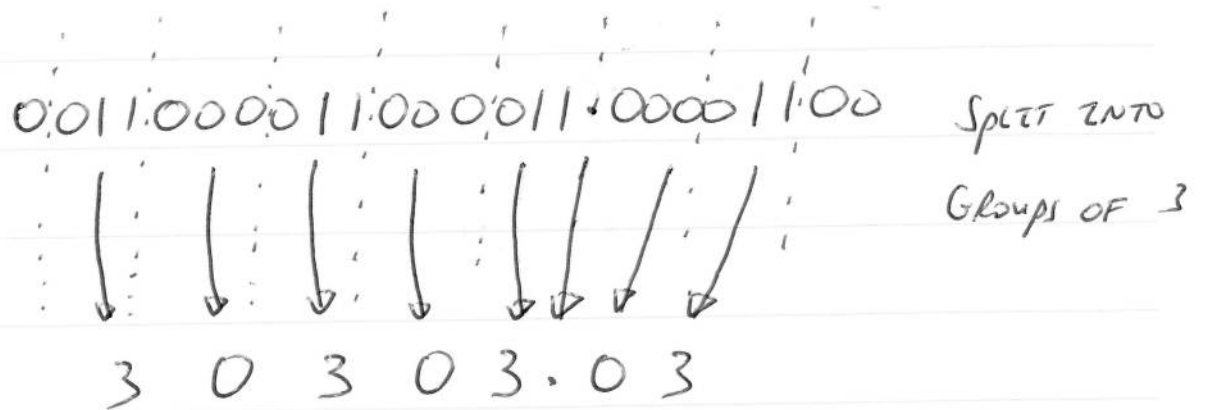
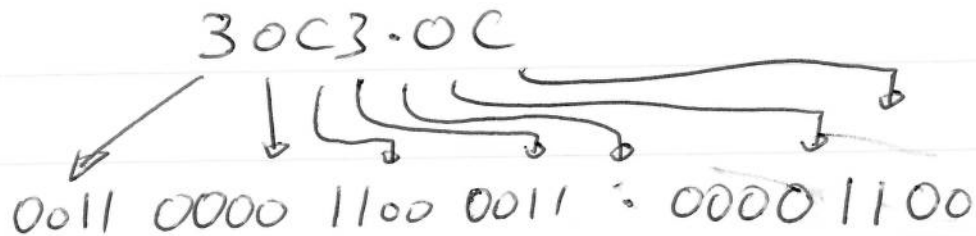
Groups of 3 bits

PAD WITH ZEROS

$673.5_8$

(14)

Example 31 : Convert  $30C3.0C_{16}$  to octal.



$30303.03_8$