Chapter 1

NUMBER SYSTEMS AND CODES

1.1

(1) Base 3

(a) $(245)_{10} = (?)_3$

```
3 |245
3 | 81   2 ↑
3 | 27   0 |
3 |  9   0 |
3 |  3   0 |
3 |  1   0 |
    0   1  |   = (100002)3
```

(b) $(461)_{10} = (?)_3$

```
3 |461
3 |153   2 ↑
3 | 51   0 |
3 | 17   0 |
3 |  5   2 |
3 |  1   2 |
    0   1  |  =(122002)3
```

(c) $(76.5)_{10} = (?)_3$

```
3 |76                    .5
3 |25   1 ↑               x 3
3 | 8   1 |              1.5    *repeats
3 | 2   2 |
    0   2 |          =(2211.1̄)3
```

(d) $(46.45)_{10} = (?)_3$

```
3 |46                    .45
3 |15   1 ↑              x 3
3 | 5   0 |             1.35
3 | 1   2 |              x 3
    0   1 |             1.05
                         x 3
                         0.15
                          x 3
                         0.45    *repeats
```

$=(1201.\overline{1100})_3$