Computer Arithmetic

MODULE TEST

You may wish to review the exercises before taking this module test. Once you begin the test, do not refer to the course materials.

There are five questions.

NOTE

For each question in this module test, you are given work space and an answer space. The course administrator will review *only* the answer space.

1. Add the following pairs of octal and binary numbers.

a. $34_8 + 5_8$

b. $66_8 + 65_8$

c. $735_8 + 116_8$

d. $111101_2 + 100101_2$

e. $111111_2 + 101101_2$

f. $10010011_2 + 11011101_2$

Answers

a.
b.
c.
d.
e.
f.

2. Subtract the following pairs of octal and binary numbers using the *direct subtraction* method.

a. $74_8 - 6_8$

b. $527_8 - 70_8$

c. $7027_8 - 2474_8$

d. $1110100_2 - 1010101_2$

e. $11000000_2 - 101011_2$

f. $10101000_2 - 1000110_2$

Answers

a.
b.
c.
d.
e.
f.

3. Subtract the following pairs of octal and binary numbers using the *complementary addition* method. *Ignore overflow* when recording your answer.

a. $732_8 - 61_8$

b. $410_8 - 104_8$

c. $601_8 - 15_8$

d. $11010001_2 - 11001101_2$

e. $10010011_2 - 1110111_2$

f. $10100110_2 - 10011001_2$

Answers

a.
b.
c.
d.
e.
f.

4. Express each of the following decimal and octal numbers in the binary format specified.

   Express in *8-bit two's complement* binary format:

   a. 6_{10}

   b. -111_8

   Express in *16-bit two's complement* binary format (include – sign where necessary):

   c. -4801_{10}

   d. 30406_8

   Answers

   Octal Conversion **Binary Answer**

   a.
   b.
   c.
   d.

5. Convert each of the following binary numbers into its octal equivalent. Be sure to include both sign (+ or –) and octal notation (8) in *every* answer.

   Convert from *8-bit two's complement* format to octal:

   a. $11\ 010\ 111_2$

   b. $01\ 010\ 000_2$

   Convert from *16-bit two's complement* format to octal:

   c. $1\ 101\ 110\ 101\ 110\ 000_2$

   d. $0\ 000\ 100\ 011\ 001\ 111_2$

   Answers

   a.
   b.
   c.
   d.