PROBLEMS SET

1-1. Write the first 20 decimal digits in base 3.

1-2. Add and multiply the following numbers in the given base without convening to decimal.

    (a) $(1230)_4$ and $(23)_4$

    (b) $(135.4)_6$ and $(43.2)_6$

    (c) $(367)_8$ and $(715)_8$

    (d) $(296)_{12}$ and $(57)_{12}$

1-3. Convert the decimal number 250.5 to base 3, base 4, base 7, base 8, and base 16.

1-4. Convert the following decimal numbers to binary: 12.0625, 10^4, 673.23, and 1998.

1-5. Convert the following binary numbers to decimal: 10.10001, 101110.0101, 1110101.110, 1101101.111.

1-6. Convert the following numbers from the given base to the bases indicated:

    (a)decimal 225.225 to binary, octal, and hexadecimal

    (b) binary 11010111.110 to decimal, octal, and hexadecimal

    (c)octal 623.77 to decimal, binary, and hexadecimal

    (d) hexadecimal 2AC5.D to decimal, octal, and binary

1-7. Convert the following numbers to decimal:

    (a) $(1001001.01l)_2$ (e) $(0.342)_6$

    (b) $(12121)_3$ (f) $(50)_7$

    (c) $(1032.2)_4$ (g) $(8.3)_9$

    (d) $(4310)_5$ (h) $(198)_{12}$

1-8. Obtain the l's and 2's complement of the following binary numbers: 1010101, 0111000, 0000001, 10000, 00000.

1-9. Obtain the 9's and 10's complement of the following decimal numbers: 13579, 09900, 90090, 10000, 00000.

1-10. Find the 10's complement of $(935)_{11}$

1-11. Perform the subtraction with the following decimal numbers using (1) 10's complement and (2) 9's complement. Check the answer by straight subtraction.

    (e) 5250 - 321   (c) 753 - 864

    (f) 3570 - 2100   (d) 20 - 1000

1-12. Perform the subtraction with the following binary numbers using (1) 2's complement and (2) l's complement. Check the answer by straight subtraction.

    (a) 11010 - 1101   (c) 10010 - 10011

    (b) 11010-10000   (d) 100 - 110000

1-13. Prove the procedure stated in Sec. 1-5 for the subtraction of two numbers with $(r - l)$'s complement.

1-14. For the weighted codes (a) 3, 3, 2, 1 and (b) 4, 4, 3, - 2 for the decimal digits, determine all possible tables so that the 9's complement of each decimal digit is obtained by changing l's to 0's and 0's to l's.

1-15. Represent the decimal number 8620 (a) in BCD, (b) in excess-3 code, (c) in 2, 4, 2, 1 code, and (d) as a binary number.