ESC201A Assignment 8

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Topics

Binary numbers

Questions

1. Convert the following numbers into the number system indicated
   (a) $(1010.011)_2$ to decimal
   (b) $(FA)_{16}$ to decimal
   (c) $(101110101101)_2$ into hexadecimal
   (d) $(FA)_{16}$ to binary

2. Convert the decimal number 27.25 into a binary number.

3. What is the largest decimal number that you can represent using 8bits? How many bits are required to represent decimal numbers less than or equal to 10^6?

4. Determine the number system in which the following arithmetic operations have been carried out. Give justifications for your answer.
   (a) 24+17=40
   (b) 22 x 5 = 132

5. Obtain 1's and 2's complement of the following binary numbers:
   (a) 10000000
   (b) 10101010
   (c) 01110101
   (d) 10011100

6. (a) What is the minimum number of bits required to represent -32 in 2's complement form?
   (b) 11011111 is a number in 2's complement. Is it positive or negative? What is its magnitude?

7. Carry out the following four operations using 8bit 2's complement representation:

   $$\pm 24 \pm 32$$

   Verify that operations have been properly carried out.