

Tutorial 1

Chapter 2: Numbering System

Final Exam 2010/2011 (Sem1)

1. The following bytes represent a person's name as it would be stored in a computer's memory. Each byte contains padded ASCII code. Determine the name of the person.

1000001 1001101 1000101 1010011

[6 Marks]

Final Exam 2011/2012 (Sem1)

2. The number 36_8 is given. Convert the number into binary number, decimal number and hexadecimal number. What is 2's complement for this number?

[4 Marks]

3. Calculate each of the signed numbers

(i) $01111101 + 00111010$

(ii) $11100111 - 00001110$

[3 Marks]

Final Exam 2011/2012 (Sem2)

4. Solve the following;
 - (i) Express 353_8 in hexadecimal
 - (ii) Determine $-144 - (-35)$
 - (iii) Determine $110011/110$
 - (iv) Convert the binary number 11100101 to Gray code
 - (v) Convert the Gray code 10110101 to binary

[11 Marks]

Test 1 2011/2012 (Sem1)

5. (a) Convert the decimal fraction 0.9028 to binary using repeated multiplication by 2 (give your answer in 4 significant digits). ($A=0.1110011_2$)

[2 marks]

(b) Demonstrate how many bits are required to represent the decimal numbers in the range from 0 to 999 using:

- (i) Straight binary code? (A=10bits)
- (ii) Using BCD codes? (A=12bits)

[2 marks]

(c) Solve subtraction in the 2's complement form for 00110011-00010000.
(A= \pm 00100011)

[3 marks]

Test 1 2011/2012 (Sem 2)

6. (a) List **2 (TWO)** differences between analog and digital system.

[4 marks]

(b) Determine the hexadecimal number from decimal number 750 by repeated division.

(A= $2EE_{16}$)

[2 marks]

(c) Perform addition operation in the 2's complement form for 15 and -7 (represent the decimal number in 8-bit binary number). (A= \pm 00001000 \rightarrow +8)

[4 marks]