Solution

Problem 1: (20 points)

[1] 110111   [2] 100010

[3] 111100   [4] 100

[5] 110000   [6] 011110

[7] 000000   [8] 111111

[9] 011111   [10] 100000

Problem 1: (24 points)

```
1  int mask = X >> 31
   return (x ^ mask) - mask
```

2 [1] n   [2] i   [3] j

   [4] mask   [5] ^   [6] |

Problem 3: (12 points)

[1] 0x104   [2] 0x87654322 [3] %ecx

[4] 0x1   [5] 0x10c   [6] 0x00000008

[7] 0x108   [8] 0xfffffffe [9] %eax

[10] 0x100   [11] %edx   [12] 0x10b

Problem 4: (28 points)

1 [1] 804832a   [2] (%esp)   [3] %eax

   [4] 0xfffffffc(%ebp) [5] $0xa

2 1) %ebp: 0xbf8ce5b8
      %esp: 0xbf8ce5b0

   2) Line 8: put the arg0 to stack
      Line 11: get return value from callee
      Line 16: set the return value for this call

3 In %eax. The return value form mystery is also for main function.

Problem 5: (16 points)

1 **[1]**   **f4 ef cd ab 09**

   [2]   **f8 ab 23 78 45**

2

  0xbfb88bbc
  - / %ecx
  0x457823ab
  0x09abcdef
  0x12345678
  0x3
  - / %ebp(new)-0x10

3

  0xbfb88bbc
  - / %ecx
  0x45782355
  0x09abcd11
  0x12345678
  0x0 / 0x0 / -
  - / %ebp(new)-0x10