BEYKENT UNIVERSITY — ***Faculty of Engineering and Architecture***

Name, Surname : ≠ ANSWERS ≠
Student ID :
Course Code : 520000002261195
Title : INTRODUCTION TO COMPUTER ENGINEERING
Assessment : ☐ Quiz • Midterm ☐ Final
Date : 21.11.2018

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(40) 1. We introduced a new representation of bit patterns similar to HexaDecimal, namely **ExamDecimal Representation,** using bit groups of 5 instead of 4. You can use the letters for the symbols in this new representation.

00000 0
1
⋮
9
A
B
⋮
01111 F
⋮

(10) After giving your bit pattern symbol assignment table, answer the following:

a. Using ExamDecimal, what is the bit pattern 11011100110100100111 ?

22 19 9 7
R J 9 7

(10)

b. Which bit pattern is 5LABE in ~~ExamDecimal?~~

(10) 00101 10101 01010 01011 01110

c. What is the Parity Bit in (a) and (b) ?

(10) = 5×2 12 1s, parity-A = 1 13 1s, parity-B = 0

2. What integer does ExamDecimal "BH" denote in 2's complement notation? Show the required steps.

11111 ✓

(20)

8 7 6 5 4 3 2 1
2^8 2^7 2^6 2^5 2^4 2^3 2^2 2^1 2^0
0 1 0 1 1 1 0 0 0 1

(+) positive

$1\times2^8+1\times2^6+1\times2^5+1\times2^4+1\times2^0$
$256+64+32+16+1$

3. Show the steps of Euclidean Algorithm to find **gcd(A,32)**.
A is the last two digits of your student number +7.

(36)

(15) 36+7 = 43

m = 43, N = 32 , R ≠ 0, m = 32, N = 11, R ≠ 0, m = 11, N = 10, R ≠ 0, m = 10, N = 1

43 | 32
32 | 1
R = 11

32 | 11
22 | 2
R = 10

11 | 10
10 | 1
R = 1

10 | 1
10 | 10
R = 0

gcd = 1

(10) 4. In the Kernel of an Operating System, ...SCHEDULER..... is responsible from adding new processes and deleting terminated processes from the process table, whereas ...DISPATCHER..... controls the time sharing among processes and process switching tasks.

5. What is a Semafor, why do we need to use it as a programmer? Explain in 2-3 sentences.

(15) It is a control flag, where a process signals it during its enter to the critical region. As a programmer, we need to use it to avoid deadlocks because OS might ignore them.