

KATHMANDU UNIVERSITY
End Semester Examination [C]
May/June, 2019

02 JUN 2019
Course : COMP 315
Semester : I
F. M. : 40

Level : B.E./B.Sc.
Year : III
Time : 2 hrs. 30 mins.

SECTION "B"
[6Q. × 4 = 24 marks]

Attempt *ALL* questions.

1. Discuss the concept of parity generator and parity checker. Write down the binary values for 2421 code. [3+1]
2. Illustrate the working mechanism of 1 bit ALU with necessary figure(s).
3. An instruction 0 AND 245H is stored in memory location 10 in RAM. Discuss fetch, decode and execute cycle of this instruction. Assume all the necessary data.
4. Compare and contrast register organization with stack organization of CPU. [2+2]
5. Divide $(+103)_{10}$ by $(-15)_{10}$. Assume data are stored as signed- magnitude numbers.
6. What is asynchronous data transfer? Elaborate two methods to ensure reliability in asynchronous data transfer. [1+3]

SECTION "C"
[2Q. × 8 = 16 marks]

Attempt *ALL* questions.

7. Branch and Save return address (BSA) is hardware implementation of function call. Illustrate its instruction cycle with necessary register transfer language. Draw flowchart for multiplication algorithm using **Booth's** approach and solve multiplication of $(-3)_{10} * (-2)_{10}$. [3+3+2]
8. Discuss the working principle of a FIFO buffer. Illustrate the use of ASHR and ASHL operations with an example of your choice. Illustrate the use of PC relative addressing mode and Index register addressing mode to find an operand in a memory. [3+3+2]

