



Quiz 1 – FALL 2024

| | | | | | |
|--------------------|--------------------------------------|----------------------|-------------------------|---------------|--------|
| Course Title: | Computer Organization & Architecture | Course Code: | CPE 343 | Credit Hours: | 4(3,1) |
| Course Instructor: | Dr. Muhammad Nacem Awais | Program Name: | BS Computer Engineering | | |
| Semester: | 5 th | Batch: | FA22 | Section: | B |
| Date: | 1 st October, 2024 | Time: | 10 minutes | | |
| Student's Name: | Muqadas Imtiaz | Maximum Marks: | 10 | | |
| | | Registration Number: | 30 | | |

Question 1:

[CLO1-PLO2-C3]

[10 Marks]

Apply a suitable integer binary arithmetic algorithm to solve $A-B$ for $A=5$ and $B=15$ where each number is represented using 6 bits (sign + magnitude).

$$A = 5$$

$$\begin{array}{r|l} 2 & 5 \\ \hline 2 & 2 \rightarrow 1 \\ \hline & 1 \rightarrow 0 \end{array}$$

$$B = 15$$

$$\begin{array}{r|l} 2 & 15 \\ \hline 2 & 7 \rightarrow 1 \\ \hline 2 & 3 \rightarrow 1 \\ \hline & 1 \rightarrow 1 \end{array}$$

$$A = 000101$$

$$B = 001111$$

Now taking B's complement

$$\begin{array}{r} 110000 \\ \hline 110001 \end{array}$$

$$A + (-B) =$$

$$\begin{array}{r} 000101 \\ + 110001 \\ \hline 110110 \end{array}$$

$$\boxed{(110110)_2} \text{ Ans}$$