GLA UNIVERSITY
MATHURA

Addition of Unsigned Binary Numbers

Binary Addition

- Adding of two binary numbers follows same as addition of two decimal numbers.
- There are mainly 5 rules should be followed in the process of addition in binary numbers:

							Sum	Carry
Rule 1	**:**	**0**	**+**	**0**	**=**		**0**	**0**
Rule 2	**:**	**0**	**+**	**1**	**=**		**1**	**0**
Rule 3	**:**	**1**	**+**	**0**	**=**		**1**	**0**
Rule 4	**:**	**1**	**+**	**1**	**=**		**0**	**1**
Rule 5	**:**	**1**	**+**	**1**	**+**	**1**	**=**	**1**	**1**

Binary Addition

- **Example 1**

  Perform Binary Addition for $101_2 + 010_2$

  Solution:

$$\begin{array}{r} 1\ 0\ 1 \\ +\ 0\ 1\ 0 \\ \hline 1\ 1\ 1 \end{array}$$

- **Example 2**

  Perform Binary Addition for $(10)_{10} + (20)_{10}$ by using 8-bit representation.

Solution: 10 → 00001010

\+ 20 → 00010100

30 → 00011110 → $(30)_{10}$

Questions

Q 1 : Perform the binary addition of 125 +101 in 8 bits.

Q 2 : Perform the binary addition of 84 + 67 in 8 bits.

Ans: Binary of 84 = 1 0 1 0 1 0 0 ; 67 = 1 0 0 0 0 1 1

Binary of 125 = 1 1 1 1 1 0 1 ; 101 = 1 1 0 0 1 0 1

```
  0 1 0 1 0 1 0 0
+ 0 1 0 0 0 0 1 1
  ----------------
  1 0 0 1 0 1 1 1
```

```
  0 1 1 1 1 1 0 1
+ 0 1 1 0 0 1 0 1
  ----------------
  1 1 1 0 0 0 1 0
```