

Ans:- For different values of  $M$  our circuit behaves as 4-bit adder and 4-bit-subtractor respectively because as value of  $M$  changes the XOR gate output also changes i.e. the input to full adder changes. For example, if initially for a value of  $M$  the XOR gate output is  $+B$  then when its value changes the output becomes  $-B$  as a result the operation performed by the full adder becomes  $A+(-B)$ .