20181CSE0621
Sai Ram.

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Sai Ram. K
6-CSE-10

Part-B

Q.1] **PERCEPTRONS:-**

A perceptron is a single layer neural network. It takes a vector for real valued inputs, calculates a linear combination of these inputs then outputs '1' if the result is greater than some threshold & -1 otherwise

- Given inputs $x_1 \ldots x_n$, & output $O_1 \ldots O_n$

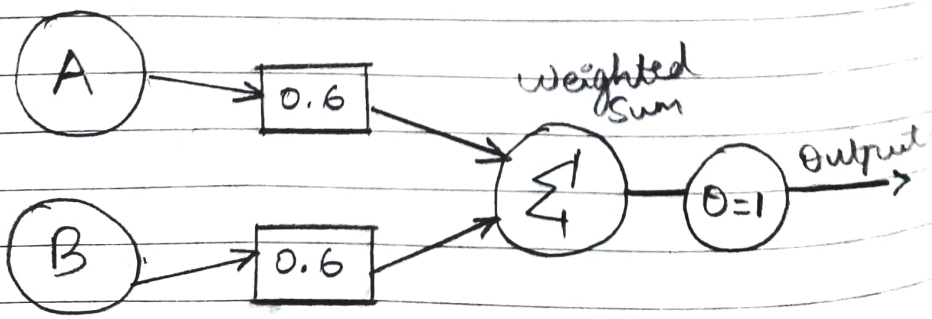
$$O(x_1, \ldots x_n) = \begin{cases} +1, \text{ if } w_0 + w_1 x_1 + \ldots + w_n x_n > 0 \\ -1 \text{ otherwise.} \end{cases}$$

—> **Implementing AND function**

– **Table:-**

A	B	A ∧ B
0	0	0
0	1	0
1	0	0
1	1	1

– **Perceptron:-**



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→ STEPS involved in AND function:

(1) If A=0 and B=0
=> 0*0.6 + 0*0.6 = 0
This is not greater than threshold of 1
∴ output = 0

(2) If A=0 and B=1
=> 0*0.6 + 0.6*1 = 0.6
This is not greater than threshold of 1
∴ output = 0.

(3) If A=1 and B=0
=> 1*0.6 + 0.6*0 = 0.6
This is not greater than threshold.
∴ output = 0.

(4) If A=1 and B=1
=> 1*0.6 + 0.6*1 = 1.2
This exceeds the threshold.
∴ Output = 1.