Question - 1°

Test set

f	1	2	3	6	6	7	10	11
Label	1	1	0	0	0	1	1	1

Test set

(i) Using KNN Classifier where K=3

$$d = \sqrt{(x - x_i)^2}$$

(6,6) (6,3) (6,2) (6,1) are the points needs to be caluclated i.e.

$d = \sqrt{(6-6)^2} = 0$

$d = \sqrt{(6-3)^2} = 3$

$d = \sqrt{(6-2)^2} = 4$

$d = \sqrt{(6-1)^2} = 5$

} Here nearest K=3

i.e (0, 0, 1)

Max = 0 (Here output is also 0')

Caluclate the rest points which are also '0'

(ii) Confusion Matrix:

$$\text{Accuracy} = (T_p + T_N) \Big/ (T_N + F_p + F_N + T_p)$$

$$\text{Sensitivity} = \frac{T_p}{T_p + F_N}$$

$$\text{Specificity} = \frac{T_N}{(F_p + F_N)}$$

	0	1
0	$T_N = 1$	$F_P = 0$
1	$F_N = 3$	$T_P = 0$

Accuracy $A = \frac{(0+1)}{(1+0+3+0)}$

$= 1/4 = 0.25$

Hence the Accuracy is 25%

Sensitivity, $S = \frac{0}{0+3} = 0$

Specificity, $Sp = \frac{1}{0+1} = 1$