Ques 1 (a) Training error will inc. when n is large. So when we varies K from n to 1 ⦸ it will decrease for K=1 it will be zero as Testing point is itself in training.

Ques 1(b) when K is large generalization error will be less but when K is small / 1 the generalization error is high as similar data item may present which is not of same class

After some point of time if we increase K then again the generalization error will start to inc. as it now going to converge extra Classes which might not belong it class
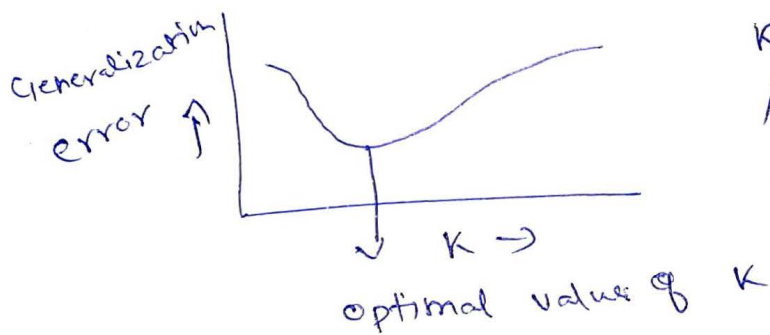
Too low value of K might include /predict class which is not of its own & large include all neighbour class

Generalization error ↑

K →

optimal value of K

Ques 1 (c)

i) When there are alot of feature / higher dimension data then ⦸ on predicting the test data it will have to search alot so its comp. cost will inc

ii) comp. di on higher dimension distance ⦸ metric of training dataset ⦸ will become non-itutive IC it doesn't become relevant which became is the basis of KNN

Ans 1(4) i) Yes, it is possible

ii)

Dist	Class
1	C1
2	C2
3	C2
4	C2

1 NN

Test point · 2.1
class = C1
Test point = 2.6
Class = C2

To Costruct decision Tree we take ave. of distar

7/ 2.5

```
     7/ 2.5
      /    \
   [C1]    [C2]
```
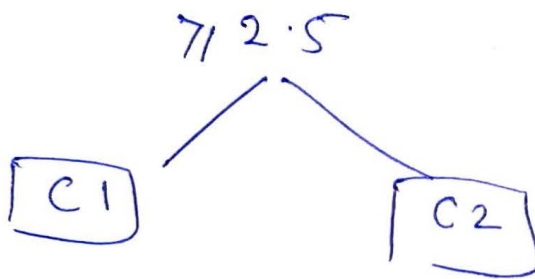
So when 2.1 Comes
it will goto class C1
& when 2.6 Come it
will goto class C2