Part :- 2

1) In the plot of 1K ep in Q-Table 5 bins per dimension has $5^4 \times 2$ possible values in Q-Table while other has $(50)^4 \times 2$ possible values. Initially machine focusses on explorsation then exploitation so large amount of episodes is required for 50 bins / dimension hence it is not able to generate better results in less episodes but since 5 bins has less data. so completes explorsation fast then goes to exploitation so better results.

2) 10K ep has more data so 50 bins one is able to complete more of its data from explorsation and is able to understand. give more accurate answers as it then uses exploitation which gives more better result in long run.

3) No as it requires large amount of data and a lot of intervals for it to give best result it, It might create problem in certain cases fore ex:- if a discrete interval $[-\varepsilon, \varepsilon]$ is given same state and program is if the value is less than 0 and then sometimes in this same state in Q-Table program would terminate and sometimes it would give reward & then it would become difficult for machine to understand.

4) Yes it would give better result than 1K ep as it Q-Table becomes larger and more data is added.
~~so bins~~