T.C.

MARMARA UNIVERSITY

FACULTY of ENGINEERING

COMPUTER ENGINEERING DEPARTMENT

CSE4088

Introduction to Machine Learning

Homework #4

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Question 2)

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-----  Question 2  -----
Ein for 0: 0.9119462350843506
Ein for 2: 0.8362364559045399
Ein for 4: 0.8362364559045399
Ein for 6: 0.8362364559045399
Ein for 8: 0.8362364559045399
```

With C = 0.01 and Q = 2, the highest E_{in} is (a) 0 versus all.

Question 3)

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-----  Question 3  -----
Ein for 1: 0.7093677136195309
Ein for 3: 0.8362364559045399
Ein for 5: 0.8362364559045399
Ein for 7: 0.8362364559045399
Ein for 9: 0.8362364559045399
```

The lowest E_{in} is (a) 1 versus all.

Question 4)

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-----  Question 4  -----
Difference =  1793
```

Substraction of highest and lowest E_{in} equals 1793. So, the difference close to (c) 1800.

Question 5)

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-----  Question 5  -----
--- C = 0.001 ---
Ein = 0.9338910986147305
Eout = 0.9267563527653214
Vectors = 76
--- C = 0.01 ---
Ein = 0.9414346454532986
Eout = 0.9322371699053313
Vectors = 34
--- C = 0.1 ---
Ein = 0.9396516252914552
Eout = 0.9307424015944196
Vectors = 24
--- C = 1 ---
Ein = 0.9308736798793033
Eout = 0.9212755356253114
Vectors = 24
```

As a result, lowest E_{in} is achieved when C = 1. Therefore, the answer is (d).

Question 6)

```
-----  Question 6  -----
--- C = 0.0001 ---
Ein = 0.9129063228638047
Eout = 0.8998505231689088
Vectors = 236
--- C = 0.001 ---
Ein = 0.9338910986147305
Eout = 0.9267563527653214
Vectors = 76
--- C = 0.01 ---
Ein = 0.9414346454532986
Eout = 0.9322371699053313
Vectors = 34
--- C = 1 ---
Ein = 0.9308736798793033
Eout = 0.9212755356253114
Vectors = 24
```

The answer is (e) None of the above.

Question 7)

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Question 8)

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Question 9)

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Question 10)

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