Quiz 4: Introduction to Deep Learning
Introduction to Supervised Learning

*Required

1.   Email *

2.   Please enter your name: *

We want to classify movie reviews into 5 categories: 1 to 5 stars. (1 for the worst movies, 5 for the best movies)

Review (X)	Rating (Y)
"This movie is fantastic! I really like it because it is so good!"	★★★★☆
"Not to my taste, will skip and watch another movie"	★★☆☆☆
"This movie really sucks! Can I get my money back please?"	★☆☆☆☆

Processing sequences of integers (a small example)

Consider the following documents:

- This movie is awesome
- This movie is so bad
- What a great movie

3. Using the following dictionary, how would the second document be encoded?   1 point

```
{ « This »      :  1,
   « movie »     :  2,
   « is »        :  3,
   « awesome »   :  4,
   « so »        :  5,
   « bad »       :  6,
   « What »      : 7,
   « a »         : 8,
   « great »     : 9}
```

Mark only one oval.

◯ [1, 2, 4, 5]

◯ [7, 8, 10, 2]

◯ [1, 2, 3, 5, 6]

4. We want to use One Hot Encoding to transform the list of sequences into a tensor that   1 point
we can feed to a neural network, what would be the shape of this tensor?

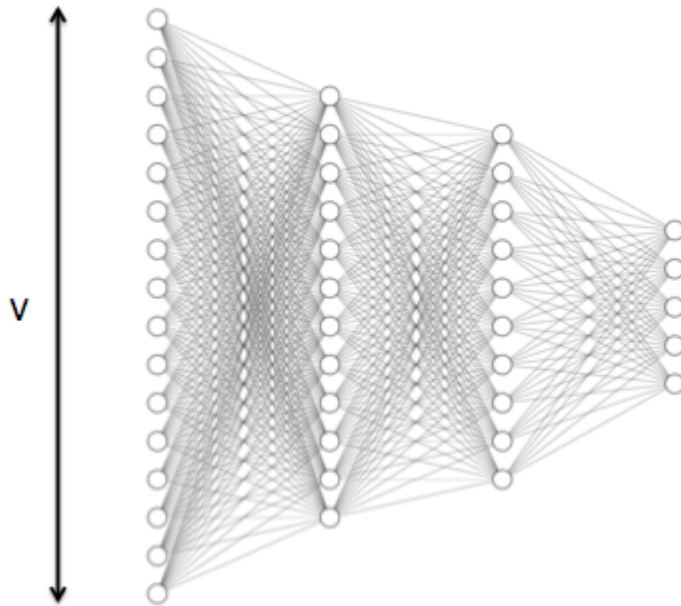*Mark only one oval.*

◯ (3, 9)

◯ (9, 5)

◯ (3, 3)

5. What would be the first row of this tensor?   1 point

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Building the model

Now that the data has been preprocessed. We want to feed the tensor in a Deep Neural Network with several Dense layers.

6. How many neurons should the last layer contain?   1 point

Mark only one oval.

◯ 1

◯ 5

◯ 10

7. What should be the activation function in the last layer?   1 point

Mark only one oval.

◯ softmax

◯ sigmoid

◯ tanh

8. What should be the loss function?   1 point

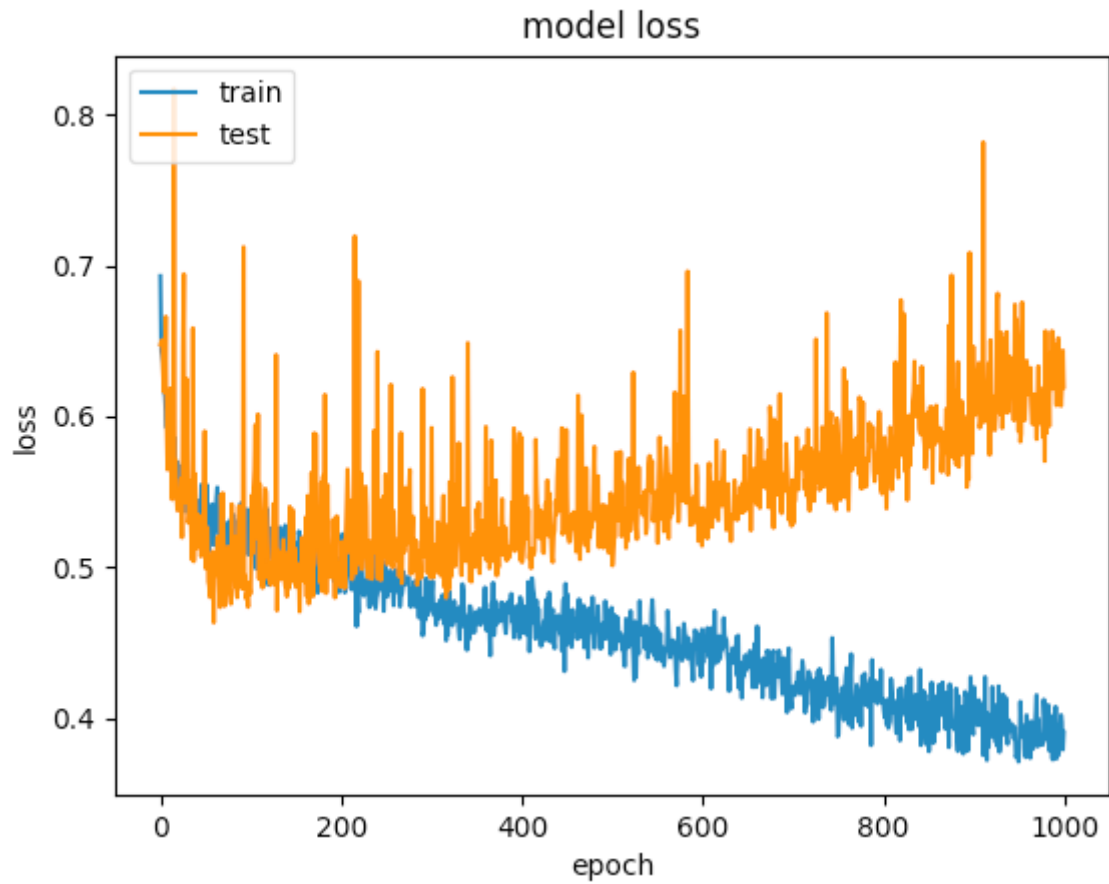*Mark only one oval.*

◯ Binary cross entropy

◯ Categorical cross entropy

◯ MSE

9. How is this loss related to Maximum Likelihood Estimation?   1 point

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10.   After the training process, we obtain the following validation and training losses.   1 point
      What is the problem?

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11.   How can we solve the previous problem?   1 point

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12.   Explain why the previous model is suboptimal regarding the nature of data   1 point

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Programming Session

13.   Did you understand the problem?

Mark only one oval.

◯ Yes

◯ No

14.   Any comment?

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