Name: SID:

COMP 4446 / 5046 Quiz 1 (week 4) - version A

Please read the instructions on the screen before beginning. Select **all** correct options by filling in circles: ●. If you make a mistake, draw an X over the circle: ⊗.

1. (1 mark) What benefits does a One-Hot Vector have over a Sparse Vector?
   - ○ Lower memory usage
   - ○ Faster to calculate similarity
   - ● **Faster to modify a value**
   - ● **Faster to check a value**

2. (1 mark) Which of the following is true of a Model?
   - ● **It calculates the score of an (input, output) pair**
   - ○ It finds the correct output
   - ○ It calculates the score for an input
   - ○ It finds a high scoring output

3. (1 mark) Select all of the statements that are true about recurrent neural networks:
   - ○ They can only predict one output for each input
   - ○ They do not suffer from the vanishing gradient problem
   - ● **They can easily and effectively handle inputs of different lengths**
   - ○ They contain a non-linearity

   Solution: Note: Selecting the bottom two options also got full credit.

4. (1 mark) For each scenario below, you are deciding what metric should be optimised to keep users happy. Of the options provided, which is best? Note that the rubric for this question will consider both responses together (ie., it will not be 0.5 each).

   Identifying documents that are relevant to a trial. Here, a true positive is a relevant document that is labelled as relevant. It is important that no relevant documents are missed.

   ○ Precision ● **Recall** ○ F-Score ○ Accuracy

   Classifying whether a website is written in Italian for a study of how commonly Italian is used online. Here, a true positive is an Italian website that is labelled as Italian. It is important that the results are representative of the web.

   ○ Precision ○ Recall ● **F-Score** ○ Accuracy

5. (1 mark) In workshop 2, task 2, we calculated how often people lied. Using the lines below, implement code to take a list of labels and calculate what fraction are lies.

```
1  fraction = total / count
2  fraction = count / total
3  total += 1
4  count += 1
5  total, count = 0, 0
```

```
6  if label == "lie": total += 1
7  if label == "lie": count += 1
8  if label == "truth": total += 1
9  if label == "truth": count += 1
10 for label in labels:
```

   In each row below, choose one line of code by filling in the appropriate circle. You do not have to use all the given code and you do not have to use all rows below.

Solution: Solutions, where numbers in square brackets means those rows could occur in any order:

- 5, 10, [7, 3], 2
- 5, 10, [6, 4], 1
- 5, 10, [6, 7, 8], 2
- 5, 10, [6, 7, 9], 1

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○