

**Department of Data Science**  
**IIT Palakkad**  
**CS5007 : Deep Learning**

1400-1450

Quiz 3 (04 Mar 2022)

Marks : 10

**Instructions**

1. Write your answers neatly in Blue/ Black ink. Do not use pencil / Red ink. If your answer is not legible, you will not get any marks for that.
2. Doubts and questions will not be answered during the exam. If you have to make any assumption about unspecified things, write the assumption clearly with justification.
3. Answer all parts of a question together. If the parts of a single question are not together, then only the first part will be evaluated. Other parts will not get any marks.
4. Write your name and ID number at the top of the answer sheet. Save the pdf with the following naming convention: [name]\_dl22\_quiz\_3.pdf and upload to the designated assignment in LMS. Do not email.
5. Write question number clearly for each answer. Draw a line after the answer.
6. No hard or soft material are permitted for consultation during the exam.
7. There will be partial markings for the questions, so even if you are not able to solve the entire problem be sincere with the steps.

1. Consider the following neural network. The output function is softmax. The activation function in the hidden layers is sigmoid. Compute the update equation for  $c$  assuming squared loss. You have to show each step clearly with appropriate intermediate variables and a neat final update equation, without that you will not get any marks. You are free to choose your notation, but it should be clearly defined at the beginning. (10)

