Islamic University of Technology (IUT)   **CSE Department**

CSE 4621: Machine Learning	Quiz #03
Time 25 Minutes	Marks: 15

Instructions:
    i.   CLOSED book exam. No browsing. Keyboard use is prohibited.
    ii.   Keep your camera ON throughout the test time.
    iii.   Write your Student ID & Page Number at the top of each page.
    iv.   At the end of the test, take pictures of your script and convert it to a single pdf file.
    v.   Capture & Submit during the upload session ONLY. DO NOT take pictures or upload even if your exam finishes early.
    vi.   Upload time is maximum 10 minutes.

1.	Suppose your model is overfitting your training dataset. How can you identify it from the learning curve? If you are to fix it with the regularization parameter λ, how can your learning curve help you to choose the right choice of λ value? Draw necessary graphs.	2.5+ 2.5
2.	In case of a multi-layer neural network, what happens if all weights are initialized to zero?	5
3.	Where and why do you use Softmax function in a neural network? Apply a Softmax function on the following vector and produce the normalized output. $$z = \begin{bmatrix} (\#_1 + 1.1) \\ (\#_2 + 0.3) \\ 1.2 \end{bmatrix}$$ Here $\{\#_1, \#_2\}$ values are the last two digits of your student ID.	5