Name: **ID:**

IT549: Deep Learning

2st In-Semester Exam (3rd April 2023)

DA-IICT, Gandhinagar

Time Duration: **60 Minutes**

Total Marks: **22**

Q.1 (4 points)

Answer True or False. 0.5 points for the correct answer and -0.25 for the wrong answer, 0 points if do not attempt it.

(a) The gradient of the "**Relu**" activation function is bounded between -1 to 1. _____

(b) Multiple linear regression can be used for solving non-linear regression. _____

(c) When using batch normalization, the mean of the output from the given node became zero. _____

(d) The sigmoid function in the output layer **can be** used for multiple regression. _____

(e) **ADAM** optimization, but not **SGD**, always find the global minima in the non-linear ANN model. _____

(f) CNN used the **Error-backpropagation** algorithm for parameter training. _____

(g) In a deep neural network, when the **error is near zero**, the model is converged, and training is stopped. _____

(h) In CNN, increasing the image size will increase the number of parameters. _____

Q.2 Fill in the gap (**3 points**)

(a) The output size of **valid convolution** in which image size 64x64 with Kernal size 5X5 is _____.

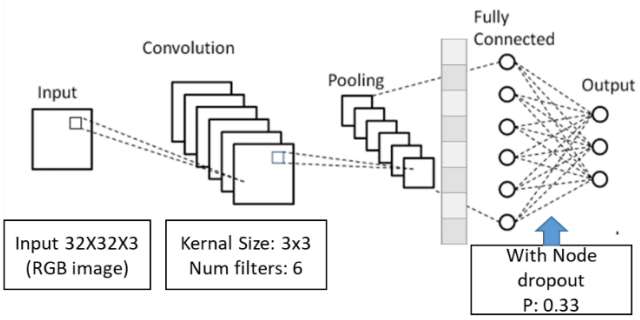
(b) In the CNN model, for predicting **ordinal value** target outcome, you will choose _____as an activation function in the output layer and _____as a loss function.

(c) The gradient value of the **linear activation** function for positive input is _____, and for negative input, value is_____.

Q.3 For the CNN model given below, answer the following (**2 points**)

(a) How many parameters are in the first CNN layer:_____

(b) How many parameters are in the last layer in FCN:_____



Q.4 Given the confusing matrix, compute the performance measures, e.g**. precision, recall, and specificity** for the '***C3***' class from the following confusion matrix. (**3 points**)

		Predicted		
	classes	***C1***	***C2***	***C3***
Actual	***C1***	100	150	250
	C2	150	200	150
	C3	100	100	300

Q.5 how will you determine whether the model is over-fitted or not? (**2 points**)

Q.6 what do you mean by regularization? What is the use of it in deep learning? (**2 points**)

Q.7 What do local connectivity and parameter sharing in CNN mean? (**2 points**)

Q.8 What do you mean by batch normalization? What is the use of it? (**2 points**)

Q.9 what do you mean by adaptive gradient? What is the impact of it in training the model?

You may explain with the help of RMSprop or ADAM. (**2 points**)