410255: **LP-V. DL 2.A 22-23 (2nd Sem)**				
Student Name :				
BE Computer Division		Roll No		Batch
Experiment No: 2A	Classification using Deep neural network – **Multiclass Classification**			

Aim : Classification using Deep neural network : (Any One from the following)
1. Multiclass classification using Deep Neural Networks: Example: Use the OCR letter recognition dataset https://archive.ics.uci.edu/ml/datasets/letter+recognition
2. Binary classification using Deep Neural Networks Example: Classify movie reviews into positive" reviews and "negative" reviews, just based on the text content of the reviews. Use IMDB dataset

1. Multiclass classification Using deep learning

Objective of the Assignment: Students should be able to solve Multiclass classification using DeepNeural NetworksSolve
Prerequisite:
1. Basic of programming language

2. Concept of Multi Classification

3. Concept of Deep Neural Network

Contents for Theory:

1. What is Multi-Classification

2. Example of Multi-Classification

3. How Deep Neural Network Work on Multi-Classification

4. Code Explanation with Output

What is multiclass classification ?
Multi Classification, also known as multiclass classification or multiclass classification problem, is a type of classification problem where the goal is to assign input data to one of three or more classes or categories. In other words, instead of binary classification, where the goal is to assign input data to one of two classes (e.g., positive or negative), multiclass classification involves assigning input data to one of several possible classes or categories (e.g., animal species, types of products, etc.).

In multiclass classification, each input sample is associated with a single class label, and the goal of the model is to learn a function that can accurately predict the correct class label for new, unseen input data. Multiclass classification can be

approached using a variety of machine learning algorithms, including decision trees, support vector machines, and deep neural networks.

Some examples of multiclass classification problems include image classification, where the goal is to classify images into one of several categories (e.g., animals, vehicles, buildings), and text classification, where the goal is to classify text documents into one of several categories (e.g., news topics, sentiment analysis).

Examples of multiclass classification-

Here are a few examples of multiclass classification problems:

Image classification: The goal is to classify images into one of several categories. For example, an image classification model might be trained to classify images of animals into categories such as cats, dogs, and birds.

Text classification: The goal is to classify text documents into one of several categories. For example, a text classification model might be trained to classify news articles into categories such as politics, sports, and entertainment.

Disease diagnosis: The goal is to diagnose patients with one of several diseases based on their symptoms and medical history. For example, a disease diagnosis model might be trained to classify patients into categories such as diabetes, cancer, and heart disease.

Speech recognition: The goal is to transcribe spoken words into text. A speech recognition model might be trained to recognize spoken words in several languages or dialects.

Credit risk analysis: The goal is to classify loan applicants into categories such as low risk, medium risk, and high risk. A credit risk analysis model might be trained to classify loan applicants based on their credit score, income, and other factors.

In all of these examples, the goal is to assign input data to one of several possible classes or categories.

Multiclass classification is a common task in machine learning and can be approached using a variety of algorithms, including decision trees, support vector machines, and deep neural networks.

Conclusion- In this way we can do Multi classification using DNN.

Assignment Question on Multiclass classification
1. What is Batch Size?
2. What is Dropout?
3. What is RMSprop?
4. Discuss loass functions available.

Attendance (5 Marks)	Conduction (5 Marks)	Oral (5 Marks)	Total (15 Marks)	Sign of Teacher