KEONICS COMPUTER CENTER, HUBLI				
Artificial Intelligence with Python				
Total Marks:	**50**	**Test – 4 (5,6)**	**Date:**	**20-08-2023**

A. Answer the following (2 Marks each) (Any 6) **Marks (2X6)=12**

1. What is perceptron in neural networks, illustrate with diagram?
2. What is artificial narrow intelligence? Give an example.
3. What is supervised machine learning, Give 1 example?
4. What is linear regression? Give one application?
5. List steps for data preprocessing and what is the significance of data cleaning?
6. List 2 Activation functions with their graphs?
7. Explain Reinforcement learning with example?

B. Answer the following (3 Marks each) (Any 6) **Marks (3X6)=18**

1. Explain Artificial Neural Network? Give one application of it.
2. Explain Convolution Neural Network? Give one application of it.
3. Explain Activation Functions? Give an example.
4. What is forward propagation? Describe with equations?
5. What is the role of hyper parameters in Machine Learning?
6. List any 4 differences between machine learning and deep learning.
7. Explain Logistic regression with equations?

Python Programming Practical

C. Answer the following with python programs with outputs. (5 Marks each)(Any 4) **Marks (5X4)=20**

1. Write a program and demonstrate BMI class prediction by using K-NN with parameters height & weight by taking classes as underweight, normal.

2. Design & train a machine learning model to perform customer segmentation using the K-means clustering algorithm with any relevant dataset.

3. A real estate agency has provided you with a dataset containing features of houses and their corresponding selling prices. Develop a regression model to predict house prices based on the given features.

4. You have data on students' study hours and their corresponding pass/fail outcomes. Build a classification model to predict whether a student will pass or fail based on their study hours. Split the data into training and testing sets, and use the k-Nearest Neighbors algorithm for classification. Calculate the accuracy of your model on the testing set and discuss its performance.

5. You have a dataset of animals labeled as "cat" or "dog" based on their weights. Build a basic classification model to predict whether an animal is a cat or a dog. Use a decision tree classifier.

6. You have a dataset of objects labeled with their colors: "red," "blue," or "green." Build a decision tree classifier to predict the color of a new object based on its size and shape. Use the following training data:

Size | Shape | Color

Small | Round | Red
Large | Square | Blue
Small | Round | Green