**Deep Learning**

## **WORKSHEET – 1**

## **Solutions**

1. B) Neural Networks
2. D) None of the above
3. C) i – v – iv – iii – ii
4. A) Recurrent Neural Network
5. A) input pattern keeps on changing
6. C) dynamic inputs & categorization can’t be handled
7. B) Statement 2 is true while statement 1 is false
8. A) Recurrent Neural network
9. A),B),D)
10. B) Rectified Linear Unit, D) Sigmoid Function
11. **Deep learning** involves taking large volumes of structured or unstructured data and using complex algorithms to train neural networks. It performs complex operations to extract hidden patterns and features (for instance, distinguishing the image of a cat from that of a dog).

1. **Reinforcement Learning** **(RL)** is a type of machine learning technique that enables an agent to learn in an interactive environment by trial and error using feedback from its own actions and experiences.

Though both supervised and reinforcement learning use mapping between input and output, unlike supervised learning where feedback provided to the agent is correct set of actions for performing a task, reinforcement learning uses rewards and punishment as signals for positive and negative behaviour.

1. Differences Between Machine Learning and Deep Learning are :-

* **Machine Learning** is a subset of AI which uses statistical methods to enable machines to improve with experiences.
* Machine learning algorithm takes less time to train the model than deep learning, but it takes a **long-time** duration to test the model.
* Machine learning models need a step of feature extraction by the expert, and then it proceeds further.
* **Deep learning** is a part of Machine learning, which makes the computation of multi-layer neural networks feasible. It takes advantage of neural networks to simulate human-like decision making.
* Deep Learning takes a long execution time to train the model, but **less time** to test the model.
* Deep learning is the enhanced version of machine learning, so it does not need to develop the feature extractor for each problem; instead, it tries to learn high-level features from the data on its own.

1. A **perceptron** is a neural network unit (an artificial neuron) that does certain computations to detect features. It is an algorithm for supervised learning of binary classifiers. This algorithm is used to enable neurons to learn and processes elements in the training set one at a time.

There are two types of perceptrons:

* **Single-Layer Perceptron**  
  Single layer perceptrons can learn only linearly separable patterns.
* **Multilayer Perceptrons**  
  Multilayer perceptrons or feedforward neural networks with two or more layers have the higher processing power.

1. Difference between AI and ML are

* AI stands for **Artificial Intelligence**. It is a technique which enables machines to mimic human behavior.
* **Machine Learning** is a subset of AI which uses statistical methods to enable machines to improve with experiences.