**WORKSHEET-1**

**DEEP LEARNING (Solutions)**

**ANS 1)** B (Neural Networks)

**ANS 2)** C (Fraud Detection)

**ANS 3)** C (i – v – iv – iii – ii)

**ANS 4)** A (Recurrent Neural Network)

**ANS 5)** A (input pattern keeps on changing)

**ANS 6)** C (dynamic inputs & categorization can’t be handled)

**ANS 7)** B (Statement 2 is true while statement 1 is false)

**ANS 8)** A (Recurrent Neural network)

**ANS 9)** A (Learning Rate is low), B (Regularisation parameter is high), D ( Stuck at local minima

**ANS 10)** B (Rectified Linear Unit), D (Sigmoid Function)

**ANS 11)** Deep learning is a sub-discipline within machine learning, which itself is a subset of artificial intelligence. The goal of deep learning is to automatically extract the most useful pieces of information needed to inform future decisions*.*

Deep learning algorithms can simply learn the associations between various points in a data set. Instead of requiring a human to shift through the data and label each data point with a set of attributes, the algorithm can assign these attributes to each data point on its own.

It is a powerful process which enables a computer to mimic human behaviour by automatically extracting the most useful pieces of information needed to inform future decisions

**ANS 12)** Reinforcement Learning is a mathematical framework for developing computer agents that can learn an optimal behaviour by relating generic reward signals with its past actions. With numerous successful applications in business intelligence, plant control, and gaming, the RL framework is ideal for decision making in unknown environments with large amounts of data.

Reinforcement Learning examples include DeepMind and the Deep Q learning architecture in 2014, beating the champion of the game of Go with AlphaGo in 2016, OpenAI and the PPO in 2017.

**ANS 13) MACHINE LEARNING:**

* Machine Learning is a superset of Deep Learning.
* Machine learning consists of thousands of data points.
* Machine Learning is highly used to stay in the competition and learn new things.
* Algorithms are detected by data analysts to examine specific variables in data sets.
* Outputs: Numerical Value, like classification of score

**Deep Learning:**

* Deep Learning is a subset of Machine Learning
* The data representation is used in Deep Learning is quite different as it uses Artificial neural networks(ANN).
* Deep Learning is an evolution to Machine Learning. Basically it is how deep is the machine learning.
* Big Data: Millions of data points.
* Anything from numerical values to free-form elements, such as free text and sound.
* Uses neural network that passes data through processing layers to the interpret data features and relations.
* Deep Learning solves complex machine learning issues.

**ANS 14)** A neural network is an interconnected system of perceptrons, so it is safe to say perceptrons are the foundation of any neural network. Perceptrons can be viewed as building blocks in a single layer in a neural network, made up of four different parts:

* Input Values or One Input Layer
* Weights and Bias
* Net sum
* Activation function

**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.

**ANS 15)**

The word Artificial Intelligence comprises of two words “Artificial” and “Intelligence”. Artificial refers to something which is made by human or non-natural thing and Intelligence means ability to understand or think.

There is a misconception that Artificial Intelligence is a system, but it is not a system .AI is implemented in the system. There can be so many definition of AI, one definition can be ***“It is the study of how to train the computers so that computers can do things which at present human can do better.”***

**whereas**,

Machine Learning is a current application of AI based around the idea that we should really just be able to give machines access to data and let them learn for themselves.

Machine learning is simply a branch of AI. It’s a study of computer algorithms that automatically become better through experience. ML is one of the ways to achieve AI.

Machine Learning is the learning in which machine can learn by its own without being explicitly programmed. It is an application of AI that provide system the ability to automatically learn and improve from experience. Here we can generate a program by integrating input and output of that program. Machine learning requires large data sets to work with in order to examine and compare the information to find common patterns.