**Mandsaur University, Mandsaur**

**Department of Computer Science & Engineering**

### **Subject: Deep Learning**

**Assignment 4**

**Q1.** Explain the concept of **unfolding computational graphs in Recurrent Neural Networks (RNNs)**. How does this unfolding help in understanding backpropagation through time (BPTT) for training RNNs?

**Q2.** Compare and contrast the architectures of **Recurrent Neural Networks (RNNs), Bidirectional RNNs, and Encoder–Decoder (Sequence-to-Sequence) models**. Give real-world examples where each is most effectively applied.

OR

**Q3.** Discuss the **challenges of long-term dependencies** in RNNs. How do advanced models such as **Long Short-Term Memory (LSTM)**, **Gated Recurrent Units (GRU)**, and techniques like **Leaky Units** or **Echo State Networks** address these challenges?