Department of Computer Science and Engineering
Indian Institute of Technology Jodhpur
CSL 4020: Deep Learning
Quiz 2

Total marks: 10 **Answer Set** **Time: 10 minutes**

Answer all the questions [Each carries 1 mark]

1. For which of these problems can you use a bi-directional LSTM?
    A. Stock price prediction using closing prices
    B. Prediction of disease progression analysis using MRI images
    C. Digitization of handwritten scripts
    D. Paragraph summarization
2. Which of the following architectures may have to use transposed convolution?
    A. ResNet
    B. U Net
    C. DenseNet
    D. Variational autoencoder for image input
3. What operations are primarily involved in updating the cell state in an LSTM?
    A. Element-wise addition
    B. Matrix multiplication
    C. Concatenation of hidden states
    D. Element-wise multiplication
4. Find the correct statements about cell state in an LSTM.
    A. The cell state depends only on the forget gate and does not depend on any other gate
    B. The cell state does not depend on the hidden state directly or indirectly
    C. Helps in faster computation of gradients during backpropagation
    D. None of the others
5. Dropout helps prevent overfitting by
    A. Randomly setting some neurons' outputs to zero during training
    B. Reducing the number of active parameters in the network
    C. Reducing the over-dependence on specific neurons
    D. Penalizing large weights

6. Weight initialization is important in neural networks
    - **A. To break the symmetry of weights**
    - B. To reduce the computational cost of training.
    - C. To ensure weights remain static during training.
    - D. To avoid overfitting.
7. For which of the following tasks can Variational Autoencoder (VAE) be helpful?
    - **A. Image classification**
    - **B. Data compression**
    - **C. Generative modeling**
    - D. None of the others
8. In a VAE, which of the following is the output of the encoder?
    - A. A single deterministic vector
    - **B. Parameters of a probability distribution (mean and variance)**
    - C. Reconstructed data
    - D. None of the others
9. The Kullback-Leibler (KL) divergence in a VAE's loss function measures which of the following?
    - A. Reconstruction error
    - **B. Difference between two probability distributions**
    - **C. Regularization strength**
    - D. None of the others
10. What are the purposes of the "reparameterization trick" in VAEs?
    - A. To speed up training by parallelizing computations
    - B. To improve reconstruction quality by reducing noise
    - **C. To allow backpropagation through sampled latent variables**
    - D. None of the others