1. What is the purpose of an autoencoder? (Select all that apply)

    a. To generate new images

    b. To classify images

    c. To compress and reconstruct data

    d. To segment objects in images

2. In a VAE, the _____ loss measures the difference between the input and reconstructed image

    reconstruction

3. Implicit density models focus on directly estimating the probability density function

    True/False

4. Which of the following is NOT component of the input representation in BERT?

    a. Token embeddings
    b. Segmentation embeddings
    c. Position embeddings
    d. Attention embeddings

5. What is the purpose of the cross-attention mechanism in the Transformer decoder?

    a. To attend to future tokens in the decoder
    b. To perform self-attention within the decoder
    c. To attend to the encoder representations
    d. To generate the final output sequence

6. ALL LLM models should have both an Encoder and a Decoder

    True/ False

7. A parametric model is a family of density functions that can be described using a finite number of parameters.

    True/ False

8. What is the main aim of discriminative modeling?

    a. To predict labels or classes for given data points
    b. To generate new data points
    c. To model the probability of observing an observation
    d. To estimate the probability of a label given an observation

9. RNNs are good at handling long-term dependencies

    True/ False

10. In a line or two describe the latent space.

    The latent space in machine learning refers to a lower-dimensional, abstract space where data is represented in a compressed form. It captures the most salient features of the data, enabling models (like neural networks or autoencoders) to find patterns or structure, often used for tasks like clustering, generation, or transformation of data.

11. The reparameterization trick in a VAE enables backpropagation through the sampling process.

    True/ False

12. Despite their success, Generative Adversarial Networks (GANs) are notoriously difficult to train and evaluate.

    True/ False