

**Please Attempt All Questions:**

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**Q-1: Differentiate between each of the following items? [5 Marks]**

- a) Linear and non-linear classifier?
- b) Programming and machine learning?
- c) Supervised and unsupervised?

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**Q-2: Define pattern recognition and its applications in details? [5 Marks]**

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**Q-3: Give short notes about: [5 Marks]**

- a) Biometrics and Bioinformatics.
- b) QoS and QoE.
- c) Error analysis.
- d) Types of quantizers.
- e) Specifications of Biometric Systems.

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**Q-4: Explain Briefly: [5 Marks]**

- a) Digital Encryption.
- b) Coding Techniques.
- c) Hamming distance, Error detection rate, error correction rate, and code rate.
- d) Analogue signals, sampled signals, quantized signals, and digital signals.

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