

(3 Hours)

Total Marks: 80

N.B.:

80 Marks

- (1) Q. 1 is compulsory.
- (2) Attempt any three out of the remaining five.
- (3) Figures to the right indicate full marks.

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| Q.1 | A | Discuss the factors affecting Backpropagation Training. | 5 |
| | B | What is Semi-Supervised Learning , and how does it differ from supervised and unsupervised learning? | 5 |
| | C | Explain the concept of gradient-based learning in deep learning? | 5 |
| | D | What is pooling in CNNs, and why is it used? | 5 |
| Q.2 | A | How can a multi-layer perceptron solve the XOR problem? | 10 |
| | B | How does optimization impact the performance and efficiency of deep learning models? | 10 |
| Q.3 | A | What are the differences between supervised, unsupervised, and reinforcement learning architectures? | 10 |
| | B | Discuss the architecture and working of a recurrent neural network (RNN) with an example. | 10 |
| Q.4 | A | How does Bidirectional RNN differ from a regular RNN, and what advantages does it provide when learning from sequential data. | 10 |
| | B | Compare different regularization techniques used in deep learning? | 10 |
| Q.5 | A | Compare AdaGrad and RMSProp in terms of their working principles, strengths, and weaknesses. | 10 |
| | B | Explain the working of a convolutional layer in deep learning. How do filters extract features? | 10 |
| Q.6 | A | Discuss how Multi-Task Learning allows a model to learn multiple related tasks simultaneously. | 10 |
| | B | Compare Residual Nets with traditional deep CNN architecture. | 10 |
