

Duration: 3hrs

[Max Marks: 80]

N.B. : (1) Question No 1 is Compulsory.**(2) Attempt any three questions out of the remaining five.****(3) All questions carry equal marks.****(4) Assume suitable data, if required and state it clearly.**

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| 1 | Attempt any FOUR | 20 |
| a | What is the need for dropout regularization in deep learning? | 05 |
| b | Explain various evaluation parameters used in image classification task. | 05 |
| c | How can we use autoencoder in image de-noising application? | 05 |
| d | Explain data augmentation with its need. | 05 |
| e | Justify need of probabilistic theory in the deep learning. | 05 |
| 2 | a Explain the working of gradient descent algorithm. Define the terms local minima, global minima, and saddle points. | 10 |
| | b Explain GoogleNet in detail. What is the need for 1 X 1 convolution and inception module? | 10 |
| 3 | a Analyze the architecture of Recurrent Neural Network (RNN) with suitable diagram. What are the problems associated with RNN? | 10 |
| | b Explain the concept of sparse autoencoder in detail. How can we use it to avoid over fitting? | 10 |
| 4 | a What is the need for regularization? Explain how early stopping concept achieves regularization. | 10 |
| | b Discuss the architecture of ResNet in detail. Justify the need for skip connections and residual module in ResNet architecture. | 10 |
| 5 | a Explain TensorFlow and computational graph with one example in detail. | 10 |
| | b Discuss Long Short Term Memory (LSTM) in detail. What the need is for forget gate, input gate and output gate in LSTM? | 10 |
| 6 | Write a short note on any two | 20 |
| | a Adaptive optimization algorithms | |
| | b Variation Autoencoder | |
| | c Application of CNN in object detection | |
