

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES****End Semester Examination, Dec 2023****Course:** Deep Learning and ANN**Program:** MCA**Course Code:** CSAI8003P**Semester:** VII**Time** : 03 hrs.**Max. Marks:** 100**Instructions: Attempt all Questions.****SECTION A  
(5Qx4M=20Marks)**

| S. No. |  | Marks | CO  |
|--------|--|-------|-----|
| Q 1    | Explain the basic differences between AI, ML and DL with the help of an example. | 4     | CO1 |
| Q2     | What is pooling in CNN? Briefly explain different types of pooling operations.   | 4     | CO1 |
| Q3     | Explain the characteristics of Sigmoid neuron.                                   | 4     | CO1 |
| Q4     | What is the criteria of choosing the loss function while developing a model.     | 4     | CO2 |
| Q5     | Define the following terms:<br>a) stride<br>b) epochs                            | 4     | CO3 |

**SECTION B  
(4Qx10M= 40 Marks)**

|    |   |     |     |
|----|---|-----|-----|
| Q6 | Explain in detail about the concept of gradient based learning. Also write the pseudo code of gradient descent.   | 10  | CO1 |
| Q7 | What is an Autoencoder? Explain the applications of Autoencoder in detail.  | 8+2 | CO1 |
| Q8 | What is an RNN? How does an RNN differ from other neural Networks?  | 7+3 | CO2 |
| Q9 | What is transfer learning? How can you use transfer learning with predefined VGG model to create an autoencoder that takes a grey level image and converts it into color image. | 10  | CO3 |

**SECTION-C  
(2Qx20M=40 Marks)**

|     |   |       |     |
|-----|---|-------|-----|
| Q10 | a) You are given a neural network that does the digit classification task, there are two hidden layers h1 (consisting of 5 neurons), h2 (3 neurons). Given a random image 8x8 as input, write down the vectorized output after every hidden layer.<br><br>b) Build the above model using Tensorflow, showing how input is read, layers are added to the model and explain various operations while learning the weights of the given input. | 10+10 | CO2 |
|-----|---|-------|-----|

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|-----|---|--------------|------------|
| Q11 | a) Explain the LSTM (Long Short Term Memory) model in detail.<br>b) Explain the working of Generative adversarial Networks in detail.<br><br><b>OR</b><br><br>a) What are Convolutional Neural networks, explain various phases of CNN. Justify your answer with appropriate figures.<br>b) What is deep reinforcement learning. Explain policy gradient methods in detail. | <b>10+10</b> | <b>CO3</b> |
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