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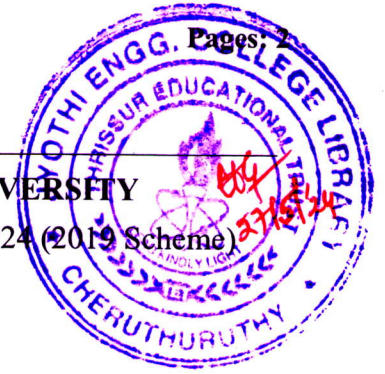
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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree (R, S) Examination May 2024 (2019 Scheme)



Course Code: RAT402

Course Name: AI AND MACHINE LEARNING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- | | | |
|----|---|-----|
| 1 | Explain the various foundations that contributed ideas, viewpoints, and techniques to AI. | (3) |
| 2 | List three difference between machine learning and deep learning. | (3) |
| 3 | Mention three unsupervised learning algorithms. | (3) |
| 4 | Explain the concept of reinforcement learning. | (3) |
| 5 | Draw the back-propagation algorithm architecture. | (3) |
| 6 | Describe gradient based learning method. | (3) |
| 7 | Give three applications of machine vision. | (3) |
| 8 | What are the challenges in image detection? | (3) |
| 9 | Explain the term localization in Robotics. | (3) |
| 10 | List the application of robot in health care. | (3) |

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

- | | | |
|----|--|-----|
| 11 | a) Discuss in detail the Turing test with necessary diagrams. | (8) |
| | b) Explain in detail how artificial intelligence can be applied in providing vision to robots. | (6) |

OR

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|----|---|-----|
| 12 | a) Discuss about the expert systems in artificial intelligence with the help of an example. | (8) |
| | b) What is the role of deep learning in speech processing. | (6) |

Module II

- | | | |
|----|---|-----|
| 13 | a) With neat sketches explain supervised and unsupervised learning. | (8) |
|----|---|-----|

- b) Explain reinforcement learning and discuss its basic elements. (6)

OR

- 14 a) Explain how stochastic gradient descent differs from the gradient descent with the help of neat diagrams. (8)
- b) Give three industrial applications each for supervised learning and unsupervised learning. (6)

Module III

- 15 Solve XOR problem using multi-layer perceptrons with neat sketch. (14)

OR

- 16 a) Explain basic recurrent neural network architecture and the functionality of its each layer. (10)
- b) Explain in detail any two industrial applications of convolutional neural network. (4)

Module IV

- 17 With a neat block diagram, describe the basic image processing operations. (14)

OR

- 18 a) Elaborate the steps involved in edge detection technique. (8)
- b) How computer vision can be utilized for effective traffic sign detection? (6)

Module V

- 19 Discuss in detail the role of Machine learning in Robotic perception. (14)

OR

- 20 Discuss in detail the application domains of Robotics in manufacturing industries for welding purposes. Explain with the help of neat sketches. (14)
