Register No: ……………………   Name: ....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)
(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)
EIGHTH SEMESTER B.TECH DEGREE EXAMINATION(R), MAY 2024
B. Tech. Robotics and Automation
(2020 SCHEME)

Course Code	:	**20RBT402**
Course Name	:	**AI AND MACHINE LEARNING**
Max. Marks	:	**100** **Duration:3 Hours**

PART A
(Answer all questions. Each question carries 3 marks)

1. What is the purpose of artificial intelligence?

2. Define the term Artificial Intelligence.

3. Explain the machine learning algorithm used for robotic motion planning.

4. Define hierarchical clustering with an example.

5. Explain the Solution to XOR problem using neural network.

6. Explain how the weights in ouput layer are adjusted with the use of backpropogation method.

7. What is scale variation in image detection and classification?

8. Write the application of AI in ball tracking in football game.

9. Explain robotic perception and discuss the challenges faced in robotic perception.

10. Explain sensing and perception in robotics.

PART B
(Answer one full question from each module, each question carries 14 marks)
MODULE I

11. Explain some of the application areas of AI in detail with diagrams.   14

OR

12. What are expert systems in AI? Design a medical expert system that can be used to diagnose any of the human diseases.   14

MODULE II

13. Describe the supervised classification algorithms SVM and KNN in detail.   14

OR

14. Define the term learning in machine learning. What are the various forms of learning? Explain in detail with neat sketches and equations.   14

MODULE III

15. With a neat diagram explain the working of recurrent neural networks.   14

OR

16. Illustrate the applications of CNN in healthcare.   14

MODULE IV

17. Explain the method of image segmentation using multilevel threshold. 14

OR

18. With relevant equations, explain region splitting and merging algorithm for segmentation. 14

MODULE V

19. Explain the application of machine learning in robotics industry with examples. 14

OR

20. Describe machine learning in robotic perception with neat diagrams. 14

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