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Question Paper Code : 40924

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2024.

Fourth/Sixth Semester

Computer Science and Engineering

CS 3491 — ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

(Common to : Biomedical Engineering/Computer Science and Design/Computer Science and Engineering (Cyber Security)/Computer and Communication Engineering/Electronics and Communication Engineering/Electronics and Telecommunication Engineering/Medical Electronics/Information Technology)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define artificial intelligence in terms of human performance.
2. Define uniformed search.
3. What is Bayesian inference?
4. How are Bayesian networks different from casual inference?
5. Compare linear and logistic regression.
6. List the advantages of SVM.
7. Mention the uses of K-means algorithm.
8. What is bagging and boosting in machine learning?
9. How does the perceptron make its information into action?
10. Mention the use of ReLU.

PART B — ($5 \times 13 = 65$ marks)

11. (a) Explain Constraint Satisfaction Problems in Artificial Intelligence.

Or

- (b) Explain heuristic search strategy with example.

12. (a) Explain Bayes' Theorem and discuss the working of Naïve Bayes' Classifier.

Or

- (b) Elaborate Bayesian networks with example.

13. (a) Why do we use Regression Analysis? Explain the different types of Regression.

Or

- (b) Illustrate how Logistic regression used to solve the classification problems.

14. (a) Explain the three types of ensemble learning in detail.

Or

- (b) How does KNN work? Illustrate with example.

15. (a) Discuss multi layer perceptron in detail.

Or

- (b) How error function is used in Backpropagation and how does Backpropagation work?

PART C — ($1 \times 15 = 15$ marks)

16. (a) Bayesian statistics lie at the heart of most statistical reasoning systems. How is Bayes theorem exploited? Illustrate with example.

Or

- (b) Which is more stable decision tree or random forest? Justify your answer with example.