USN | | | | | | | | | |

21AU71

Seventh Semester B.E./B.Tech Degree Examination, Dec.2024/Jan.2025
AI and ML in Automotive Vehicles

Time: 3 hrs.

Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a. Explain the evolution of industry 4.0 in mechanical systems with examples. **(10 Marks)**
    b. Explain the role of automation in mechanical systems for safety and interoperability with examples. **(10 Marks)**

OR

2   a. Explain hypothesis testing and its types with examples. **(10 Marks)**
    b. Differentiate between chi-square test and ANOVA techniques. **(10 Marks)**

Module-2

3   a. Explain the Turing test and its significance in evaluating AI with examples. **(10 Marks)**
    b. Differentiate between rational and non-rational seasoning in AI with examples. **(10 Marks)**

OR

4   a. Explain breadth-first and depth-first search techniques with examples. **(10 Marks)**
    b. Explain minimax reach algorithm and the role of alpha-beta pruning. **(10 Marks)**

Module-3

5   a. Explain a brief history of AI and its goals. **(10 Marks)**
    b. Explain the difference between A* and AO* algorithms. **(10 Marks)**

OR

6   a. Explain propositional and predicate logic in knowledge representation. **(10 Marks)**
    b. Explain Baye's theorem and its significance in decision-making and predication. **(10 Marks)**

Module-4

7   a. Explain goal stock and hierarchical planning in AI. **(10 Marks)**
    b. Discuss the Naïve Bayes classifier and decision tress. **(10 Marks)**

OR

8   a. Explain n-grams and vector space models in NLP in text classification. **(10 Marks)**
    b. Differentiate between competitive agents and swarm systems. **(10 Marks)**

Module-5

9 a. Write short notes on :
       i) K – means clustering
       ii) Neural networks.   (10 Marks)

   b. Write short notes on :
       i) Non-linear regression
       ii) C-means clustering   (10 Marks)

OR

10 a. Write short notes on :
        i) Pooling operation in CNN
        ii) Padding operation in CNN.   (10 Marks)

    b. Write short notes on :
        i) Limitations of CNN
        ii) Interoperability of CNN.   (10 Marks)

* * * * *