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## 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 reasoning 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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

**Module-5**

- 9 a. Write short notes on :  
i) K – means clustering  
ii) Neural networks.  
b. Write short notes on :  
i) Non-linear regression  
ii) C-means clustering

(10 Marks)

(10 Marks)

**OR**

- 10 a. Write short notes on :  
i) Pooling operation in CNN  
ii) Padding operation in CNN.  
b. Write short notes on :  
i) Limitations of CNN  
ii) Interoperability of CNN.

(10 Marks)

(10 Marks)

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