

CBCS SCHEME

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17CS562

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Artificial Intelligence

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain the components and categories of production system. List the requirement of good control strategies. (10 Marks)
- b. Explain steepest Hill climbing technique with an algorithm. Comment on its drawbacks and how to overcome these drawbacks. (10 Marks)

OR

- 2 a. Consider trying to solve the 8-puzzle instance given below using Hill climbing. Apply any heuristic function appropriate to solve the problem. (10 Marks)

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- b. List and explain the problem characteristics which must be analyzed before deciding on a proper heuristic search. (10 Marks)

Module-2

- 3 a. Consider the following sentences:
- John likes all kinds of food.
 - Apples are food.
 - Anything anyone eats and isn't killed by is food.
 - Bill eats peanuts and is still alive.
 - Sue eats everything Bill eats.
- (i) Translate all the sentences into formulas in predicate logic.
- (ii) Convert formulas from previous step into clause form.
- (iii) Prove that John likes peanuts using resolution. (12 Marks)
- b. Differentiate between forward and backward reasoning and list the factors that influences the choice between them. (08 Marks)

OR

- 4 a. Define CNF. Give an algorithm for converting given propositions to CNF. (10 Marks)
- b. Explain the different approaches used for knowledge representation and list the qualities a good knowledge representation system should possess. (10 Marks)

Module-3

- 5 a. Explain Justification based Truth Maintenance System (JTMS). What are the two critical criterion that must be met during labeling of JTMS and illustrate with suitable example. (10 Marks)
- b. What are partitioned semantic nets? Express the following quantified expression using semantic nets:
- (i) Every dog has bitten a mail carrier.
- (ii) Every dog in town has bitten the constable. (10 Marks)

OR

- 6 a. What are the key issues in non-monotonic reasoning system? Explain the two approaches used for logic representation for non-monotonic reasoning. (10 Marks)
- b. Define Bayes theorem. What are its limitations? How certainty factor is used to overcome its limitation? (10 Marks)

Module-4

- 7 a. Explain the conceptual dependency representation of an event or action. (10 Marks)
- b. Explain MINMAX search with appropriate algorithm. (10 Marks)

OR

- 8 a. What is global ontology? What are the distinctions provided by Global ontology for defining a 'thing'? (10 Marks)
- b. What are scripts? Explain the important components of a script with an example. (10 Marks)

Module-5

- 9 a. Explain the usage of Soundex Algorithm for phonetic based spell checking with suitable example. (10 Marks)
- b. Write a note on knowledge acquisition. (10 Marks)

OR

- 10 a. List and explain the steps involved in natural language processing. (10 Marks)
- b. What is Analogy based learning? Differentiate between transformations analogy and derivational analogy. (10 Marks)
