

CBCS SCHEME

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15CS562

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

Artificial Intelligence

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. What is Artificial Intelligence? List the task domains of Artificial Intelligence. (05 Marks)
b. Explain Depth-First search algorithm with an example. (05 Marks)
c. Explain Means-Ends analysis with an example. (06 Marks)

OR

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- 2 a. A water jug problem states "you are provided with two jugs, first one with 4-gallon capacity and the second one with 3-gallon capacity. Neither have any measuring markers on it. How can you get exactly 2-gallons of water into 4-gallon jug?"
i) Write down the production rules for the above problem. (08 Marks)
ii) Write any one solution to the above problem. (08 Marks)
b. Explain problem characteristics with respect to heuristic search. (08 Marks)

Module-2

- 3 a. Explain property inheritance algorithm with example. (06 Marks)
b. Write the algorithm for conversion to clause form. (10 Marks)

OR

- 4 a. Explain forward versus Backward Reasoning with examples. (08 Marks)
b. List the issues in knowledge representation. (04 Marks)
c. Define Horn clause and give the syntactic difference between PROLOG and logic. (04 Marks)

Module-3

- 5 a. Explain Dempster-Shafer theory with example. (06 Marks)
b. Explain Partitioned Semantic Nets with example. (06 Marks)
c. Briefly explain the motivation for fuzzy logic. (04 Marks)

OR

- 6 a. Explain Bayesian network in detail. (08 Marks)
b. Write a note on Dependency-Directed Backtracking. (08 Marks)

Module-4

- 7 a. Define Conceptual Dependency. List the rules of conceptual dependency. (08 Marks)
b. Write the algorithm for minimax (position, depth, players) and explain. (08 Marks)

OR

- 8 a. What is a script? What are the components of a script? Write the Restaurant Script. (10 Marks)
b. Write the algorithm for: (i) Depth first iterative deepening (ii) Iterative deepening – A*. (06 Marks)

Module-5

- 9 a. Explain the different steps in natural language understanding process. (08 Marks)
b. Explain candidate elimination algorithm with example. (08 Marks)

OR

- 10 a. Explain knowledge acquisition. (10 Marks)
b. Explain the classification of spell checking techniques. (06 Marks)



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Fifth Semester B.E. Degree Examination, June/July 2023
Artificial Intelligence

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. What is Artificial Intelligence? List the task domains of Artificial Intelligence. (06 Marks)
 b. Explain Means – Ends Analysis with an example. (06 Marks)
 c. Explain Production System. (04 Marks)

OR

- 2 a. Write a note on Water Jug Problem using Production Rules. (08 Marks)
 b. Explain how AND – OR graphs are used in Problem reduction. (04 Marks)
 c. Explain Depth – First search algorithm with an example. (04 Marks)

Module-2

- 3 a. Explain and illustrate unification algorithm. (06 Marks)
 b. What are the properties of a good system for the representation of knowledge? (04 Marks)
 c. Discuss how forward reasoning is different from backward reasoning. (06 Marks)

OR

- 4 a. With an illustration explain the process of converting well formed formulas to clause form. (08 Marks)
 b. Write a note on : i) Conflict resolution ii) Logic programming. (08 Marks)

Module-3

- 5 a. Define Frame. State the bayes theorem and explain the notations used. (06 Marks)
 b. Write a note on Justification based Truth Maintenance System (JTMS). (10 Marks)

OR

- 6 a. Write a note on closed world assumption. (06 Marks)
 b. Explain Bayesian network. (10 Marks)

Module-4

- 7 a. Explain the Conceptual dependency representation of an event or action. (08 Marks)
 b. What is Script? Write a script for ordering scene in Restaurant. (08 Marks)

OR

- 8 a. Explain MINMAX Search procedure. (08 Marks)
 b. Write a note on Iterative deepening. (04 Marks)
 c. Give the reasons to build large databases. (04 Marks)

Module-5

- 9 a. Enlist and explain different components of natural language understanding process. (08 Marks)
 b. How can a program get better without the aid of a teacher? (08 Marks)

OR

- 10 a. Write a note on Analogy. (05 Marks)
 b. Which are the capabilities of expert systems? (04 Marks)
 c. Distinguish semantic and ease grammars. (07 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.

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Fifth Semester B.E. Degree Examination, Aug./Sept.2020 Artificial Intelligence

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Define Artificial Intelligence. Classify the task domains of Artificial Intelligence. (04 Marks)
b. List the properties of Knowledge. (04 Marks)
c. Discuss the production rules for solving the Water – jug problem. (08 Marks)

OR

- 2 a. Briefly discuss any four problems characteristics. (06 Marks)
b. Write an algorithm for : i) Steepest – Ascent hill climbing with example. (10 Marks)
ii) Best – First search with example.

Module-2

- 3 a. Discuss any two approaches of Knowledge representation. (08 Marks)
b. Consider the following sentences :
i) John likes all kinds of food ii) Apples are food iii) Chicken is food
iv) Anything anyone eats and isn't killed by is food.
v) Bill eats peanuts and is still alive vi) She eats everything Bill eats.
Translate these sentences into formulas in predicate logic. (08 Marks)

OR

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- 4 a. In brief, discuss forward and backward reasoning. (10 Marks)
b. Write a resolution algorithm for predicate logic. (06 Marks)

Module-3

- 5 a. Explain the two approaches of default reasoning. (10 Marks)
b. Define Baye's theorem. (06 Marks)

OR

- 6 a. Explain Bayesian Networks. (06 Marks)
b. What is semantic net? List the uses of semantic net. (05 Marks)
c. Construct partitioned semantic net representation of "Every batter hit a ball". (05 Marks)

Module-4

- 7 a. What is Conceptual Dependency (CD)? How do you represent Conceptual Dependency? (08 Marks)
b. What is Script? Write a script for ordering scene in restaurant. (08 Marks)

OR

- 8 a. Briefly explain minmax search procedure. (08 Marks)
b. Discuss iterative deepening and provide algorithm for depth first iterative deepening. (08 Marks)

Module-5

- 9 a. Explain the steps of natural language understanding process. (08 Marks)
b. Discuss the spell checking techniques. (08 Marks)

OR

- 10 a. Write a short note on : i) Rote learning ii) Learning by taking advice. (08 Marks)
b. How to built expert system efficiently? (08 Marks)

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Fifth Semester B.E. Degree Examination, Feb./Mar. 2022 Artificial Intelligence

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. What is Artificial Intelligence? List the task domains of Artificial Intelligence. (06 Marks)
b. Explain Means – Ends Analysis with an example. (06 Marks)
c. Explain Production System. (04 Marks)

OR

- 2 a. Write a note on Water Jug Problem using Production Rules. (08 Marks)
b. Explain how AND – OR graphs are used in Problem reduction. (04 Marks)
c. Explain Depth – First search algorithm with an example. (04 Marks)

Module-2

- 3 a. Explain the approaches to Knowledge representation. (10 Marks)
b. Distinguish Forward and Backward reasoning. Explain with example. (06 Marks)

OR

- 4 a. Write the Algorithm for conversion to clause form. (10 Marks)
b. Write a Resolution algorithm for Predicate logic. (06 Marks)

Module-3

- 5 a. Define Baye's theorem. (06 Marks)
b. Explain Dempster – Shafer theory with example. (06 Marks)
c. Briefly explain the motivation for Fuzzy logic. (04 Marks)

OR

- 6 a. Explain Bayesian Networks. (06 Marks)
b. Define Semantic network with an example. (04 Marks)
c. Explain Non-Monotonic logic and Default logic with example. Which are the two common kinds of Non-monotonic reasoning defined in these logics? (06 Marks)

Module-4

- 7 a. Explain the Conceptual dependency representation of an event or action. (08 Marks)
b. What is Script? Write a script for ordering scene in Restaurant. (08 Marks)

OR

- 8 a. Explain MINMAX Search procedure. (08 Marks)
b. Write a note on Iterative deepening. (04 Marks)
c. Give the reasons to build large databases. (04 Marks)

Module-5

- 9 a. What is Natural Language Processing? Explain the steps in process. (08 Marks)
b. Explain Candidate Elimination Algorithm, with example. (08 Marks)

OR

- 10 a. Explain Knowledge Acquisition. (08 Marks)
b. Discuss the Spell Checking Techniques. (08 Marks)

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Fifth Semester B.E. Degree Examination, July/August 2022 Artificial Intelligence

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. What is an AI Technique? Explain. (06 Marks)
b. State and explain Algorithm for Best First Search, with an example. (06 Marks)
c. Explain Production System. (04 Marks)

OR

- 2 a. State the algorithm for Steepest Ascent Hill Climbing with its disadvantages. (06 Marks)
b. Explain how AND – OR graphs are used in problem reduction. (06 Marks)
c. Explain Simulated Annealing. (04 Marks)

Module-2

- 3 a. Explain the Frame problem. (06 Marks)
b. What is "Matching" in rule based system? Briefly explain different proposals for Matching. (06 Marks)
c. Explain mapping between Facts and Representation with example. (04 Marks)

OR

- 4 a. Write the algorithm to unify (L_1, L_2). (06 Marks)
b. Write a note on Conflict Resolution. (06 Marks)
c. Write a note on Control Knowledge. (04 Marks)

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Module-3

- 5 a. Briefly explain the motivation for Fuzzy Logic. (06 Marks)
b. Write a note on Dempster Shafer Theory. (06 Marks)
c. Explain Abduction and Inheritance. (04 Marks)

OR

- 6 a. Define Semantic Networks. Explain with an example. (06 Marks)
b. State Baye's theorem. How it is used in statistical reasoning? Explain. (06 Marks)
c. Give the reasons to build large databases. (04 Marks)

Module-4

- 7 a. Write a note on Iterative Deepening. (06 Marks)
b. List the rules of Conceptual Dependency. (06 Marks)
c. List the components of a Script. (04 Marks)

OR

- 8 a. Explain Conceptual Dependency. (06 Marks)
b. Write the algorithm for :
i) Depth first iterative deepening ii) Iterative deepening – A*. (06 Marks)
c. What is Global Ontology? Explain. (04 Marks)

Module-5

- 9 a. Distinguish between Semantic Grammars and Case Grammars with examples. (06 Marks)
b. Explain Spell Checking techniques. (06 Marks)
c. Explain Rote Learning. (04 Marks)

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- 10 a. Write a note on Decision Tree. (06 Marks)
b. Define Learning and give the difference between Neural Net Learning and Genetic Learning. (06 Marks)
c. Briefly explain four ways of handling sentences. (04 Marks)

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Fifth Semester B.E. Degree Examination, July/August 2021 Artificial Intelligence

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions.

- 1 a. Discuss Program 1 and Program 2 with respect to Tic-Tac-toe game. (08 Marks)
b. A water Jug problem states "You are given two jugs, a 4-gallon one and a 3-gallon one. Neither has any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 gallons of water into the 4-gallon jug?"
 - (i) Write down the production rules for the above problem.
 - (ii) Write any one solution to the above problem. (08 Marks)
- 2 a. Explain Depth First Search (DFS) and Breadth First Search (BFS) algorithm. (08 Marks)
b. Explain simple hill climbing and steepest ascent hill climbing algorithm. (08 Marks)
- 3 a. Discuss the various approaches of knowledge representation. (08 Marks)
b. Write well-formed-formulas (wff's) in predicate logic for the given facts:
 - (i) Marcus was a man.
 - (ii) Marcus was a Pompeian.
 - (iii) All Pompeians were Roman.
 - (iv) Caesar was a ruler.
 - (v) All Romans were either loyal to Caesar or hated him.
 - (vi) Everyone is loyal to someone.
 - (vii) People only try to assassinate rulers they are loyal to.
 - (viii) Marcus tried to assassinate Caesar. (08 Marks)
- 4 a. Write an algorithm to convert well-formed formulas (wff's) into clause form. (08 Marks)
b. Write a short note on procedural knowledge and declarative knowledge. (08 Marks)
- 5 a. Discuss the concept of uncertainty with the help of ABC murder story. (08 Marks)
b. Explain Baye's theorem. (08 Marks)
- 6 a. Write an algorithm for property inheritance. (08 Marks)
b. Apply Baye's theorem for a given problem.
Problem : Marie's marriage is tomorrow.
 - (i) In recent years, each year it has rained only 5 days.
 - (ii) The weatherman has predicted rain for tomorrow.
 - (iii) When it actually rains, the weatherman correctly forecast rain 90% of the time.
 - (iv) When it doesn't rain, the weatherman incorrectly forecasts rain 10% of the time.The question : What is the probability that will rain on the day of Marie's wedding? (08 Marks)
- 7 a. Explain Conceptual Dependency (CD). (08 Marks)
b. Explain the components of a script with an example. (08 Marks)
- 8 a. Explain MINMAX search procedure. (08 Marks)
b. Explain alpha-beta cutoffs. (08 Marks)
- 9 a. Explain various steps involved in natural language processing. (08 Marks)
b. Explain candidate elimination algorithm. (08 Marks)
- 10 a. Mention any four major problems with respect to current expert system. (08 Marks)
b. Discuss various learning strategies. (08 Marks)

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