

Red Pages : 2

Roll No.

1. Code: 9
Code: 68

June-14 Comp.
June-14 Computer

(i) Printed Pages : 2

Roll No.

(ii) Questions : 8

Sub. Code :

6	8	1	8
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Exam. Code :

9	1	8
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B.Engg. B.E. (MBA) 6th Semester (Computer Science and Engg.)

1044

ARTIFICIAL INTELLIGENCE

Paper : CSE-614

Time Allowed : Three Hours]

[Maximum Marks : 50

Note :- Attempt five questions, selecting at least two from each Section.

SECTION-A

1. You are given a 5 gallon jug and a 2 gallon jug. Initially the 5 gallon jug is full and the 2 gallon jug is empty. Your goal is to fill the 2 gallon jug with exactly 1 gallon of water. Given this problem description, create the search tree and discuss which search strategy is appropriate to solve this problem. 10

- a) (a) Define the term Intelligence. What are the different approaches in defining Artificial Intelligence? 5

- (b) Suppose you design a machine to pass the Turing test what are the capabilities such a machine must have? 5

3. (a) Suppose you are using hill climbing to find a solution to the N-queen problem whether hill climbing is guaranteed to give you a solution? Justify your answer. 5

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[Turn over

- (b) Compare IDA star with A star in terms of time and space complexity. 5
4. (a) Build a semantic net representing the following knowledge : 5
- (i) Man (Marcus)
 - (ii) Married (Marcus Madonna)
 - (iii) Gave to (Madonna Marcus Measles)
- (b) Compare Forward reasoning and Backward reasoning. 5

SECTION-B

5. (a) What do you understand by Planning in Artificial Intelligence ? Explain how planning systems differ from classical search techniques. 5
- (b) Explain Sussman Anomaly in Block World Problem. 5
6. (a) What is Learning ? Draw the block diagram of general Learning System. 5
- (b) Differentiate between Supervised and Unsupervised Learning with example. 5
7. Differentiate between following : 10
- (a) Deductive Learning and Inductive Learning
 - (b) DENDRAL and MYCIN
 - (c) Forward and Backward Chaining.
8. (a) What is Expert System Shell ? State its advantages. 5
- (b) How expert system is different from other software such as DBMS etc. ? 5

May/2016

Printed Pages : 2

Roll No.

(ii) Questions : 7

Sub. Code :

6	8	1	9
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Exam. Code :

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B.Engg. (Computer Science & Engineering) 6th Semester

1046

ARTIFICIAL INTELLIGENCE

Paper : CSE-614/CS-614

Time Allowed : Three Hours]

[Maximum Marks : 50

Note : Question No. 1 is compulsory. Attempt two questions each from Part-A and Part-B.

1. (a) What is agent function ?
(b) How to avoid ridge and plateau in hill climbing ?
(c) What is local maxima in search technique ?
(d) Differentiate between statistical and reinforcement learning.
(e) Which factor determines forward or backward reasoning approach for an AI problem ? 2×5=10

PART-A

2. Write short notes on state space search and A* search. 10
3. (a) How alpha-beta pruning is used ? Give an example.
(b) Write a short note on approaches to knowledge representation. 5+5=10

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[Turn over

- iii. three-principal-vanishing point perspective.
- (b) Derive the three-dimensional transformation matrix for scaling in a direction defined by the direction cosines α , β , and γ .

- What are the vario
- 2
- Print
4. (a) What are non-monotonic reasoning and conflict resolution?
(b) Write short notes on iterative deepening and mean-end analysis.
5+5=10

PART-B

5. Write notes on hierarchical, conditional and multi-agent planning.
10
6. (a) What is propositional logic? Discuss with examples.
(b) Write a short note on inductive learning.
5+5=10
7. (a) Discuss architecture of expert systems.
(b) Write a short note on Decision tree base expert system.
5+5=10

Dec-14 Main compartment

Exam.Code:918
Sub. Code: 6818

1015
B.E./B.E. MBA (Computer Science and Engineering) Sixth Semester
CSE-614: Artificial Intelligence

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, selecting at least two questions from each section.

x-x-x

Section-A

- Q1 (a) How learning can be incorporated in agents? What is the role of critic in this? (4)
(b) Explain the simulated annealing algorithm? Why this algorithm is not affected with the local maxima problem. (4)
(c) What is Turing test? (2)
- Q2 (a) Explain the role of f , g and h in A^* algorithm? Explain the algorithm in detail and prove that it satisfies the graceful decay of admissibility theorem. (6)
(b) What is means ends analysis? Explain its algorithm and use of difference table in this algorithm. (4)
- Q3 (a) What is alpha-beta pruning? Explain with example. (2)
(b) What is fuzzy reasoning? Explain the defuzzify operation using an example. (4)
(c) Explain the following terms (i) default logic (ii) Circumscription (iii) Minimalist reasoning (iv) Closed World Assumption. (4)
- Q4 (a) What are certainty factors? Explain different ways to combine rules and calculate certainty factor. (4)
(b) What are partitioned semantic networks? Represent the following sentence using CD "Ramesh ate pasta using fork". (4)
(b) What are the main elements of a script? (2)

Section-B

- Q5 (a) How threats are resolved in partial order planner? How can you implement conditional planner using partial order planner? (5)
(b) Explain the Graphplan algorithm? How can you say that it would terminate? (5)
- Q6 (a) How attributes are selected in Decision tree algorithm? Explain by taking an example. (5)
(b) What do you mean by mixture of Gaussians? Explain the EM algorithm in detail. (5)
- Q7 (a) Differentiate between EBL, RBL and KBIL. What is the reason of RBDTL to perform better than normal DTL? (6)
(b) What is the difference between syntactic and semantic analysis in NLP? Explain by using example. (4)
- Q8 Write a short note on following (10)
(i) Non Monotonic Expert systems
(ii) Hierarchical Planning

x-x-x

1127

B.E. (Computer Science and Engineering)

Fifth Semester

CS-503: Artificial Intelligence

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) Define partial order planner.
- b) Define strong filler structures.
- c) Define Bayesian network.
- d) What is procedural knowledge?
- e) Define conflict resolution.

(5x2)

UNIT - I

- II. Write short notes on: AO* search and Alpha-Beta pruning. (10)
- III. a) Discuss Min-Max search and Mean-end analysis with suitable examples. (5,5)
b) Write in short for semantic nets and conceptual dependency.
- IV. a) Discuss variables in constraint satisfaction problem with example. (6,4)
b) How local maxima is related to hill climbing problem?

UNIT - II

- V. a) Differentiate between fuzzification and defuzzification. (5,5)
b) Write short note on statistical reasoning.
- VI. a) What is planning problem? How planning with state space search and partial order planning happen? (5,5)
b) Discuss decision tree based expert system with suitable example.
- VII. Write short notes on:-
 - a) Bayesian network
 - b) Learning agents
 - c) Expert systems (3,3,4)

x-x-x

Exam.Code:0917
Sub. Code: 6788

1128
B.E. (Computer Science and Engineering)
Fifth Semester
CS-503: Artificial Intelligence

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

- I. Attempt the following:-
- What is artificial intelligence? Discuss three problems which have been solved by artificial intelligence.
 - What is the reason that fuzzy logic has rapidly become one of the most successful technology for developing sophisticated control systems?
 - State the necessity of Defuzzification.
 - How much knowledge would be required by a perfect program for playing chess? Assuming unlimited computing power is available.
 - List three activities supported by programs that interact with domain experts to extract expert knowledge. (5x2)

UNIT - I

- II. a) Consider a water jug problem. You are given 2 jugs; a 4-gallon and 3-gallon jugs. Neither has any measuring mark in it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2-gallon of water into a 4-gallon jug? State the production rules for the water jug problem.
- b) Will breadth first search always find minimal solution? Justify your answer. (5,5)
- III. a) Define term heuristic. List and describe various problem characteristics that need to be considered for selecting appropriate heuristics for a given class of problems.
- b) Define semantic network. Discuss inference in semantic network. Draw semantic network for the following: "Andrew believes that the earth is flat". (5,5)
- IV. a) Consider the crypt-arithmetic problem shown below. The goal is a problem state where all letters have been assigned a digit in such a way that all the initial constraints are satisfied.

SEND + MORE = MONEY

P.T.O.

(2)

Initial state constraints:

- i) No two letters should have same value
- ii) The sums of the digits must be as shown in the problem.

Explain steps to solve the problem using the constraint satisfaction algorithm.

b) Define the following terms in reference to Hill Climbing

- i) Local Maximum
- ii) Plateaus
- iii) Ridges

(7,3)

UNIT - II

V. a) Define term agent. Explain basic kinds of agent programs.

b) Define learning. How learning in Bayesian network is done?

(5,5)

VI. a) Discuss various planning methods for handling indeterminacy.

b) Define meta knowledge. How meta knowledge is represented in rule-based expert systems.

(5,5)

VII. a) Compare monotonic and non-monotonic reasoning with help of suitable example.

b) Define expert system shell. What is the common mechanism that must be supported in expert system shell?

(5,5)

x-x-x