

PURBANCHAL UNIVERSITY

2018

Bachelor in Information Technology (B.I.T.)/Seventh Semester/Final

Time: 03:00 hrs.

Full Marks: 80 /Pass Marks: 32

BIT472CO: Artificial Intelligence (New Course)

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

Answer TWO questions.

2×12=24

1. ✓ What is searching? What are its types? Explain any two informed search techniques with suitable example. (8) 2+2+8
2. What is natural language processing? Discuss different steps in natural language processing. 3+9
3. ✓ What are agents in AI? State and explain any two types of agents with suitable example and diagram. (9) 3+9

Group B

Answer SEVEN questions.

7×8=56

4. ✓ What is AI? Explain various application of AI in real field. (5) 2+6
5. ✓ What is learning? Explain explanation based learning. (4) 2+6
6. ✓ Solve the following crypto-arithmetic problem, where different letter denote different integer and identical letters denote same integer SEND+MORE=MONEY. Show all steps how you advance through Constraint Satisfaction. (4) 8
7. What are the problem of Min-Max searching in game playing and how **alpha-beta** pruning technique is used to optimize it? Explain with example 8
8. Express the followings in to first order predicate logic (FOPL). 8
 - (a) John likes all kind of food.
 - (b) Apple and chicken are foods.
 - (c) Anything anyone eats and isn't killed by is food.
 - (d) Sue eats everything that Bill eats.
 - (e) Bill eats peanuts and is still alive.

Contd. ...

(2)

Use resolution to answer the question "does John like peanuts?"

9. What is a back propagation? Explain all the steps involved in the back propagation with suitable examples. (2) 2+6
10. What is expert system? Explain application and development of expert system. (5) 2+6
11. Write short notes on any TWO: 4+4
- (a) Bayesian network (3)
 - (b) Game playing (1)
 - (c) Genetic algorithm (2)

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PURBANCHAL UNIVERSITY

2017

Bachelor in Information Technology (B.I.T.)/Seventh Semester/Final

Time: 03:00 hrs.

Full Marks: 80 / Pass Marks: 32

SIT472CO: Artificial Intelligence (New Course)

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

Answer TWO questions.

2×12=24

1. What is searching? What are its types? Explain in detail about any two informed search techniques with suitable example.
2. Explain how brain works. What is Neural Network? How does it differ from Expert System?
3. State and explain the types of agents. Can we build an intelligent agent without learning element? Justify your answer.

Group B

Answer SEVEN questions.

7×8=56

4. Explain about semantic network and frames with suitable examples.
5. Define an expert system. Differentiate between forward and backward chaining.
6. Solve the following crypto-arithmetic problem, where different letter denote different integer and identical letters denote same integer SEND+MORE=MONEY. Show all steps how you advance through Constraint Satisfaction.
7. Define genetic algorithm. Explain different steps of genetic algorithm in brief.
8. Define a multi layer neural network. Explain back propagation algorithm for training the multilayer neural network along with an example.

Contd. ...

(2)

9. Differentiate natural language processing (NLP) with machine translation (MT). How does parse tree help in NLP, explain with suitable example.

10. What are the problem of Min-Max searching in game playing and how alpha-beta pruning technique is used to optimize it?

11. What is AI? How is it different from natural intelligence? Support with example

12. Write short notes on any TWO:

(a) MYCIN

(b) Production Rules system

(c) Hopfield Network

could be used for
not for base association of knowl.

connected to every node in a neural network.

PURBANCHAL UNIVERSITY

2017

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BIT472CO: Artificial Intelligence (New Course)

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

Answer TWO questions.

2×12=24

1. What are Expert Systems? With a neat diagram of an expert system, explain the necessary steps to develop it. 3+9
2. State inference theorems with relevant examples. Describe Bayesian network. 8+4
3. Convert the following sentences into FOPL: 6×2=12
 - (a) All people who are not poor and are smart are happy.
 - (b) Those people who read are not stupid.
 - (c) Nobody likes taxes.
 - (d) Anyone who is lucky wins the lottery.
 - (e) There are some people who exercise.
 - (f) Only healthy people can run fast.

Group B

Answer SEVEN questions.

7×8=56

4. Explain the types of agent environment.
5. What is means-ends analysis? Compare forward chaining and backward chaining.
6. Explain the semantic net with example. Why is frame system required?
7. Discuss learning by analogy with example. Explain supervised vs unsupervised learning.

Contd. ...

8. What are the steps in NLP? Construct a parse tree for the following sentence:
"The train passed the station in the early morning."
9. What is depth-limited search? Explain A* search algorithm.
10. What are the challenges of AI? Discuss any two application areas of AI.
11. Write short notes on any TWO:
 - (a) Back Propagation
 - (b) MYCIN
 - (c) Game playing

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PURBANCHAL UNIVERSITY

2016

Bachelor in Information Technology (B.I.T.)/Seventh Semester/Final
Time: 03:00 hrs.

Full Marks: 80 / Pass Marks: 32

BIT472CO: Artificial Intelligence (New Course)

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

Answer TWO questions.

2×12=24

- 1 Define artificial neural network and explain its network structure in detail. 12
- 2(a) What is reasoning? Is it same as interencing? Give your logic. 4
- (b) Explain the importance of planning in AI. What are the types of planning? 8
- 3(a) Using truth table approach, show that $P \rightarrow Q \equiv \neg P \vee Q$. 4
- (b) Convert the following sentences into FOPL: 8
 - (i) Everyone dislikes lies.
 - (ii) People don't want to spend money.
 - (iii) Everyone is younger than his father.
 - (iv) Some people like singing.

Group B

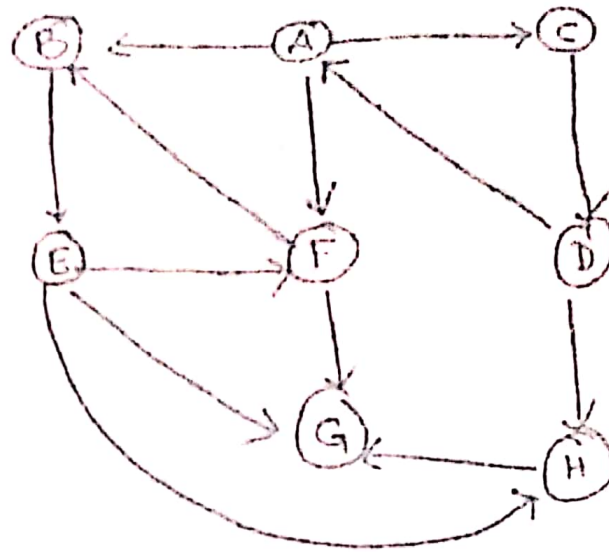
Answer SEVEN questions.

7×8=56

4. Explain syntactic and semantic analysis of NLP with example. 8
5. Define agent program and discuss its types. 8
6. What is means-ends analysis? Compare forward-chaining and backward-chaining. 2+6
7. What is learning by analogy? Explain the working of genetic algorithm. 5+3
8. What are the merits and demerits of DFS? Considering the following graph, start from state A and execute DFS. Show the order in which nodes are expanded. 8

Contd. ...

(2)



9. What is knowledge acquisition? Explain knowledge elicitation techniques. 3+5

10. Using constraint satisfaction, show all the steps that how you advance to solve the following crypt arithmetic puzzle. Also mention all the assumptions that you make: 8

$$\begin{array}{r} SEND \\ + MORE \\ \hline = Money \end{array}$$

11. Write short notes on any TWO: 4+4

- (a) Goals in AI
- (b) Back Propagation
- (c) frame system

PURBANCHAL UNIVERSITY

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2014

Bachelor in Information Technology (B.I.T.)/Seventh Semester / Final

Time: 03:00 hrs.

Full Marks: 80 / Pass Marks: 32

BIT415CS: Artificial Intelligence

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A:

Answer TWO questions.

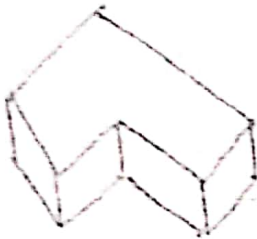
2×12=24

1(a) What is line detection? Discuss.

6

(b) Correctly label each line of the given drawings.

3+3



2(a) What is an expert system? What are the various areas of application of expert systems?

2+4

(b) Briefly describe the main components of expert systems?

6

3(a) What is a multi-layer perceptron? Give its structure.

2+4

(b) Briefly describe Khonen network.

6

Group B:

Answer SEVEN questions.

7×8=56

4. What is backward chaining? Discuss.

8

5. What is mean-ends analysis? Describe.

8

6. Distinguish between natural intelligence and artificial intelligence.

8

7. What is a semantic network? Describe it with the help of a some example.

8

Contd...

(2)

8. Represent the following sentences in predicate calculus.
- (a) All Romans were either loyal to Caesar or hated him.
 - (b) All pompeians were Romans
9. Describe case-based reasoning in detail. 8
10. Explain the working principle of a genetic algorithm with the help of a sample example. 8
11. Describe the Boltzmann machine in detail. 8
12. Write short notes on any TWO. 2x4=8
- (a) Madaline
 - (b) Frames
 - (c) Knowledge representation
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$A \Rightarrow B \vee C$
 $(\neg A \wedge B) \vee C$

4

PURBANCHAL UNIVERSITY

2012

Bachelor in Information Technology (B.I.T.)/Seventh Semester/Final

Time: 03:00 hrs.

Full Marks: 80 / Pass Marks: 32

BIT415CS: Artificial Intelligence

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A:

Answer TWO questions.

2×12=24

1. Solve the following crypt arithmetic puzzle where different letters denote different integers. State all the assumptions you make and show all the steps how you advance through constraint satisfaction.

$$\begin{array}{r} \text{LONG} \\ + \text{LIVE} \\ \hline \text{NEPAL} \end{array} \quad \begin{array}{r} \text{L O N G} \\ \text{L I V E} \end{array}$$

- 2(a) What is an expert system? Discuss its advantages. 6
- (b) What is a semantic net? Explain the significance of frame systems. 6
- 3(a) Define machine learning. What are its types? Explain any two learning methods. 8
- (b) What is back propagation? Explain. 4

Group B:

Answer SEVEN questions.

7×8=56

A. Convert the following English sentences into FOPL:

4×2=8

- (a) Farmers like raining
- (b) All snakes are poisonous
- (c) Students either study regular or during exam
- (d) Everyone saves money.

Contd....

(2)

5. What is knowledge acquisition? Explain knowledge elicitation techniques. 2+6
6. Discuss means-end analysis. Also explain MYCIN system and its applications. 3+5
7. Define natural language processing. Construct a parse tree for the following sentence. 2+6
"Tim goes for morning walk every morning".
8. What is reasoning? How does Bayesian network deal with uncertainty? Explain. 2+6
9. Define Hopfield network and its characteristics. Explain how it works. 4+4
10. What is best-first search? Why is it considered as a heuristic search? Explain. 4+4
11. Write short notes on any TWO: 2×4=8
 - (a) Reference rule
 - (b) Genetic algorithm
 - (c) Intelligent agent

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