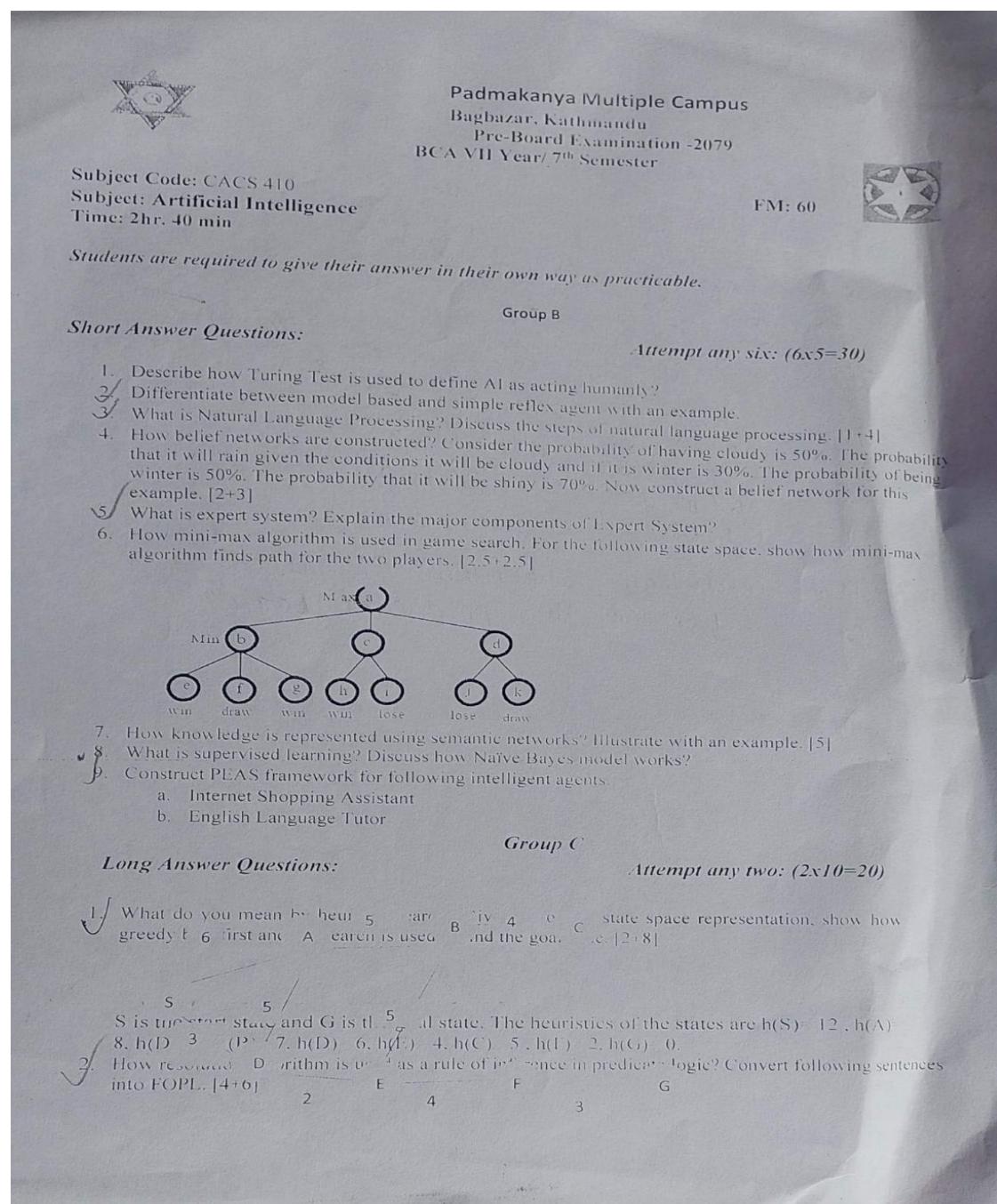


# AI Question

P<sub>k</sub>



20 copies

All over smart persons are stupid

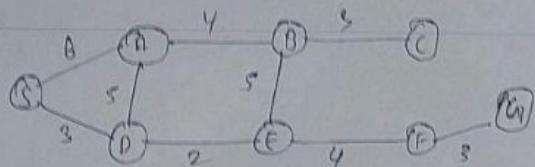
Children's of all stupid persons are naughty

Romey is Children of Harry

Harry is over smart

Prove that "Romey is naughty" using resolution algorithm

3. What is Artificial Neural Network? Define its mathematical model. Discuss how back propagation algorithm is used to train ANN? [1+2+6]



$$\begin{aligned} h(S) &= 12 \\ h(A) &= 8 \\ h(D) &= 9 \\ h(B) &= 7 \\ h(E) &= 4 \end{aligned}$$

$$\begin{aligned} h(C) &= 5 \\ h(F) &= 2 \\ h(G) &= 0 \end{aligned}$$

2. How resolution algorithm is used as a rule inference in predicate logic?

Mechi Multiple campus

**Mechi Multiple Campus**  
Bhadrapur, Jhapa  
First-Term Exam: 2022

Subject: Artificial Intelligence

**Short answer question. (30)**

Group-B

1. What is intelligent agent? Explain different types of AI agents. (with diagram)  
2. What are rational agents? Explain PEAS with a example.  
3. What is problem formulation? Write the problem formulation for 8 Queens Problem in chess world.

4. Describe four view of artificial intelligence in detail. — *Analytic, Adaptive, rational, learning*  
5. What is state space search? Explain with a example. (8 puzzle)  
6. What is meant by induction? Explain inductive learning process with example.  
7. Compare BFS and DFS search strategy.

Simple  
and  
Solving  
learning  
Goal

**Long answer question. (any two)  $10 \times 2 = 20$**

Group-C

1. What is intelligent agent? Explain different types of AI agents. (with diagram)  
2. a) What is constraint satisfaction problem? List the termination condition of CSP.

b) Solve the following Crypt-arithmetic problem:  
*CROSS + ROADS = DANGER*

- c) Discuss the hill-climbing search algorithm along with problem associated with it and discuss their Solution.  
3. What is well-defined problem? Explain MIN MAX algorithm and Alpha-Beta algorithm with example and properties.



**Mechi Multiple Campus**  
Bhadrapur, Jhapa  
End Term Exam: 2022

Bachelor in Computer Applications  
Course Title: Artificial Intelligence  
Code No: CACS410  
Semester: Seventh

Time: 3 hours

*Candidates are required to answer the questions in their own words as far as possible.*

**Short answer question. (any six ) (30)**

**Group-B**

1. What is intelligent agent? Explain different types of AI agents.
2. What is well- defined problem? Explain MIN MAX algorithm and Alpha-Beta algorithm with example and properties.
3. Define Learning. Why learning frame work required? Explain about learning frame work with diagram and example. *p 2 AS*
4. Derive the mathematical model of neural Network. Explain anyone type of neural network with its example.
5. Translate the following sentences into FOPL:
  - a. Ram like all kind of foods.
  - b. All students like good teachers.
  - c. You can fool some of the people all the time.
  - d. Not all fruits and vegetables are delicious.
  - e. All that glitter is not gold.
6. Write short notes no: (any two)
  - a. Machine Vision.
  - b. Hopfield Neural Network.
  - c. Forward Chaining and Backward Chaining
  - d. Boltzmann Machine
  - e. Expert System
7. What is meant by induction? Explain inductive learning process with example.
8. Compare BFS and DFS search strategy.

Birendra multiple campus

Birendra Multiple Campus  
Bharatpur, Chitwan  
2079

MAYUR

Bachelor in Computer Applications  
Course Title: Artificial Intelligence  
Code No: CACS 410

Semester: 7<sup>th</sup> QT Exam

Candidates are required to answer the questions in their own words as far as possible.

Full marks: 60  
Pass Marks: 24  
Time: 3 hours

**Group B**

Attempt any SIX questions.

2. What is turing test? Mention the characteristics features that an agent should have to pass turing test. [2.5+2.5]
3. How simple reflex agent works using your own assumption. Design PEAS framework from English to Nepali translation agent. [2.5+2.5]
4. Briefly define knowledge representation technique with its type. [5]
5. Briefly discuss state space representation with an example. [5]
6. What are advantages of BFS over DFS. [5]
7. Why expert system are important in AI. Describe the architecture of an expert system. [1+4]
8. Explain A\* algorithm with example. [5]

**Group C**

Attempt any TWO questions.

9. Describe feed forward neural network and feedback artificial neural networks. How can you realize AND gate and OR gate using neural network. Demonstrate with appropriate example by defining suitable weights and activation function. [5+5]
10. Briefly explain uninformed and informed search with an example of each. [10]
11. What is use of existential and universal quantifiers in FOPL? How can you convert FOPL statements into CNF form. Construct FOPL for the following statements and convert into CNF form. [2+4+4]

All students are talent person.

Every talent person are smart.

Someone who is not smart is dumb.

Ram is dumb but he is talent person.

sudipsub

20 Jan 2023, 21:03

# Board 2017 Batch

***Candidates are required to answer the question in their own words as far as possible.***

Attempt any SIX questions;

## Group B

2. what is Turing Test? Mention the characteristics features that an agent should have to pass turning Test. [2+3]
3. How simple reflex agent works? using your own assumptions, design PEAS framework for an English to Nepali Translating Agent. [2+3]
4. what do you mean by alpha beta pruning? Illustrate alpha and beta cutoff using appropriate example. [2+3]
5. define knowledge representation system. How can you represent knowledge using sementic network? illustrate with an example. [1+3+1]
6. what us learning by analogy? How transformational analogy differs from derivational analogy. [1+4]
7. Describe about natural language processing, why pragmatic analysis important in the language processing. [3+2]
8. why export system are important in AI? Describe the architecture of an export system. [1.5+3.5]

## Group C

9.describe feed forward neural network and feedback artificial neural networks. How can you realize AND gate and OR gate using neural network? Demonstrate with appropriate examples by defining suitable weights and activation function. [4+6]

10. what is the use of existential and universal quantifiers in FOPL? How can you convert FOPL statements into CNF form? Construct FOPL for following statements and convert to CNF form;

all students are talent person. every talent person are smart, someone who is not smart is dumb. Ram is dumb but he is talent person.

11. How uniformed search is different from informed search? Describe the working mechanism of breadth first search and iterative deepening search. Support your answer with appropriate state space and search paths resulted

# Patan

**Attempt any SIX questions.**

**Group - B** [6 x 5 = 30]

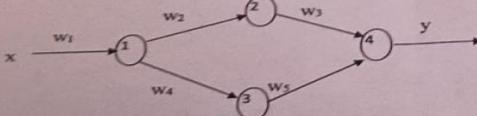
11. Define AI from the dimension of humanness and rationalism [3+2]
12. Construct PEAS framework for [5]
  - Online Exam Filling Assistant
  - Facebook Friend Recommender
13. Represent following knowledge using semantic net; [5]

All humans are mammal  
All humans have eyes.  
Weight of Ram, who is human, is larger than weight of Jelly.  
Fishes have red color  
Jelly is a fish and has weight 1 pounds  
Ram belongs to QA team from May 1<sup>st</sup> to May 21<sup>st</sup>
14. Discuss operators in the genetic algorithm. [5]
15. Differentiate natural language understanding and natural language generation. What is significance of pragmatic analysis in NLP? [3+2]
16. What is machine vision? Describe the steps of machine vision. [1+4]
17. Discuss various types of agent environments. [5]

**Group - C** [10 x 2 = 20]

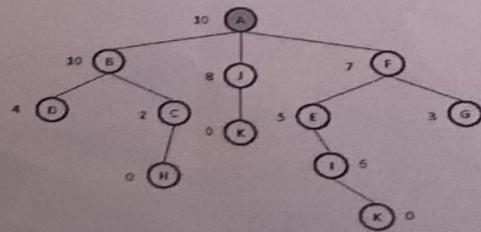
**Attempt any Two Questions.**

18. Discuss the working mechanism of the back propagation algorithm. Show one iteration of the algorithm for following ANN. [10]

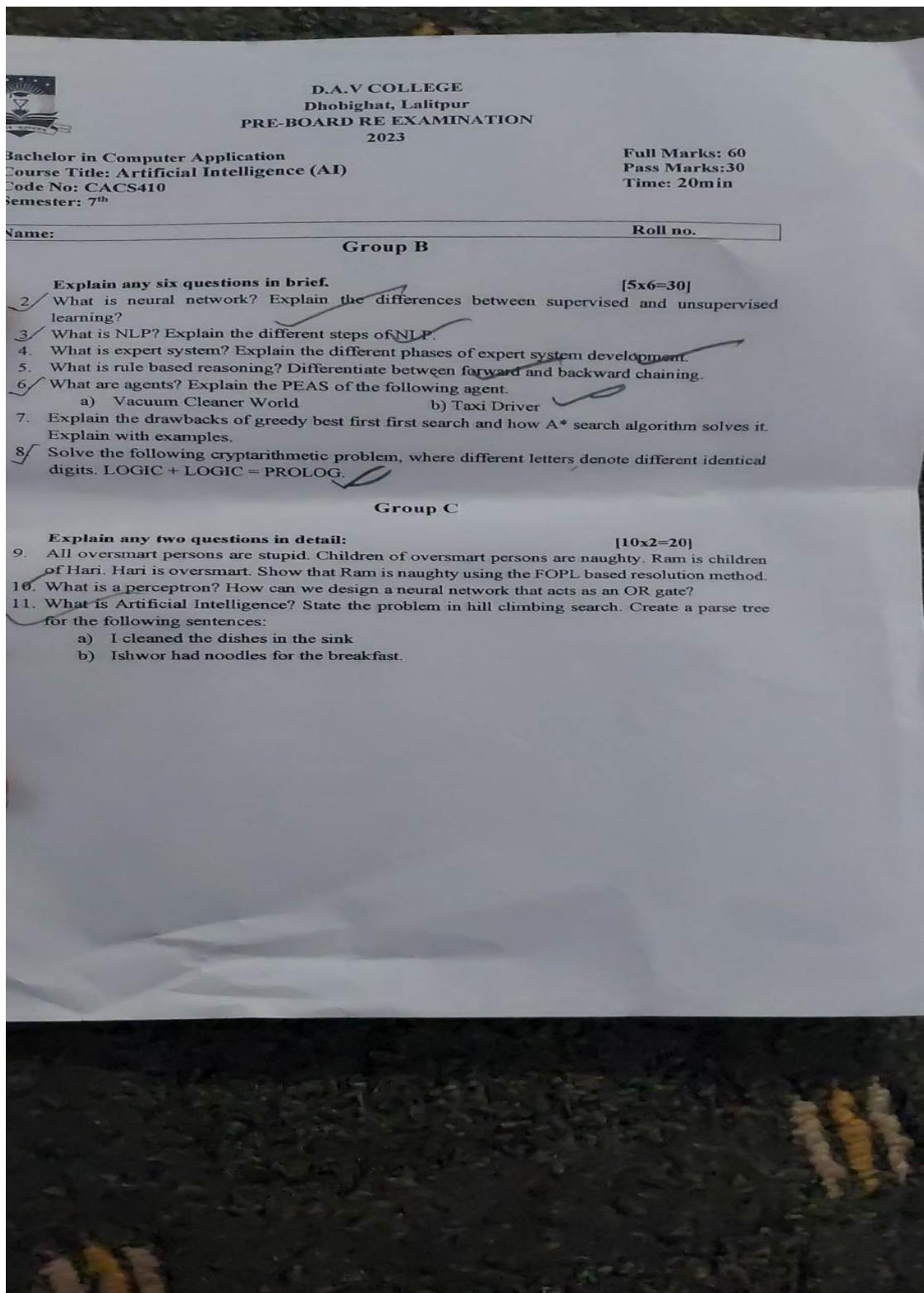


19. How knowledge is represented in predicate logic? Given following knowledge; [3+7]

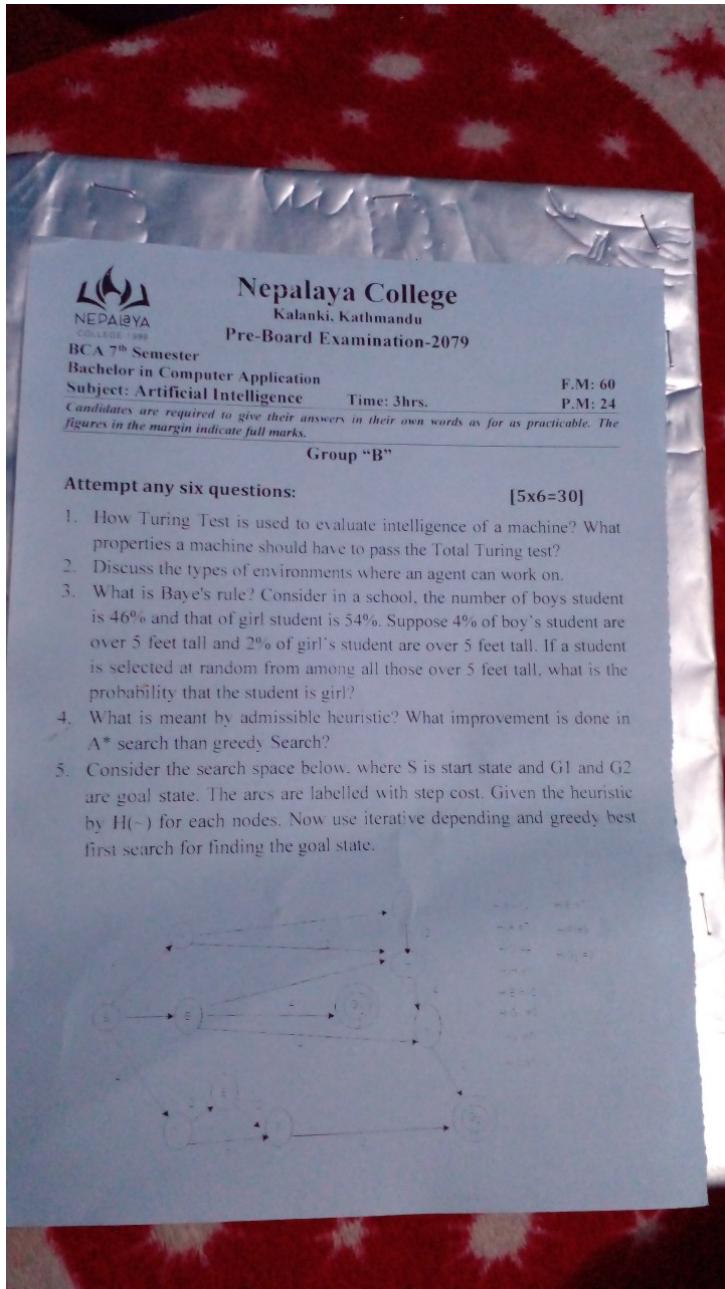
All students are talent person. Every talent person are smart. Someone who is not smart is dumb.  
Ram is dumb but he is talent person.  
Try to infer Ram is student using resolution algorithm.
20. How A\* search differs from greedy best first search? Given following state space with labelled heuristics and start state=A. Show how A\* search works. Consider actual cost between each node is 1. [4+6]



Dav



# Nepalaya



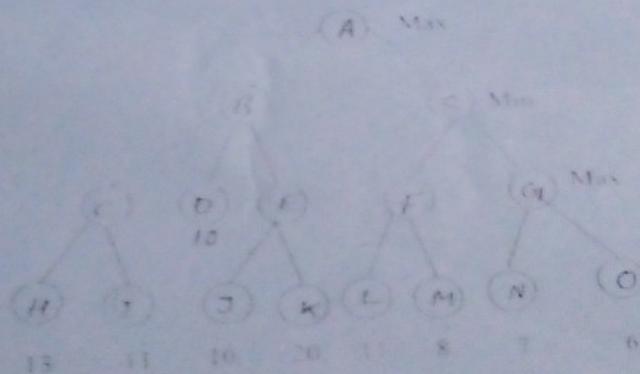
6. What is machine learning? How genetic algorithm can be used to train agents? Discuss the operations of genetic algorithm.
7. What do you mean by machine vision? Discuss the components of a machine vision system.

**Group "C"**

**Attempt any two questions:**

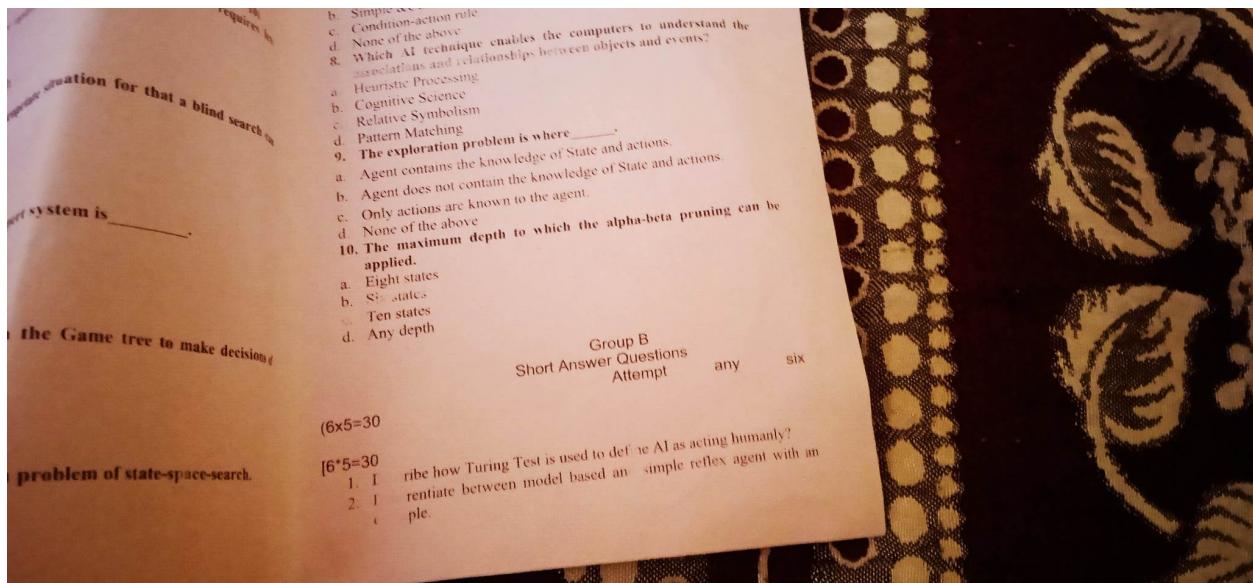
**[10x2=20]**

1. How resolution algorithm is used in FOPL to infer conclusion?  
Consider the facts:  
Anyone whom pugu loves is a star. Any hero who does not rehearse does not act. Anmol is a hero. Any hero who does not work does not rehearse. Anyone who does not act is not a star. Convert above into FOPL and use resolution to infer that "If Anmol does not work, then pugu does not love Anmol".
2. Define a natural language processing. Explain the different issues involved in the natural language processing
3. Explain alpha beta pruning in game search? Given following search space with utility, perform mini-max search and identify alpha-beta cutoff if any.



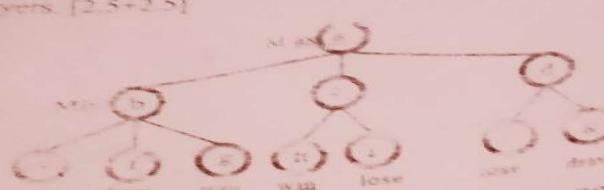
*The End...*

# KBC



10. Which model is based on the following conditions?  
 a. Critical Mass model  
 b. Comparative analysis model  
 c. Interactive service model  
 d. Majority model

**Short Answer Questions**

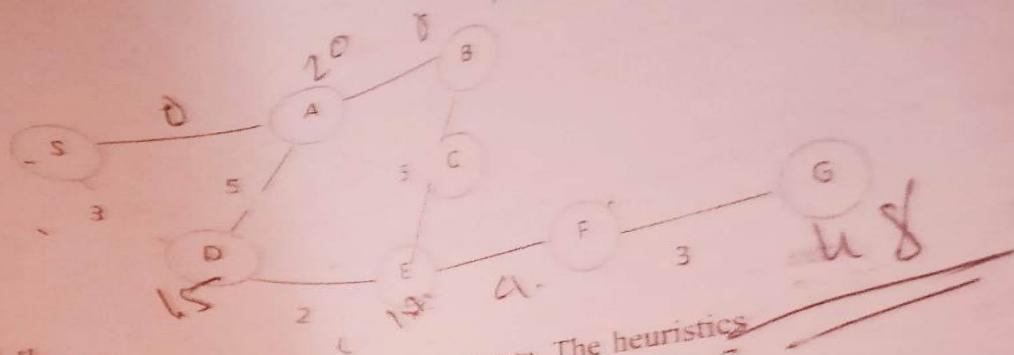
3. What is Natural Language Processing? Discuss the steps of natural language processing. [1+4]
  4. How belief networks are constructed? Consider the probability of having cloudy is 50%. The probability that it will rain given the condition it will be cloudy and if it is winter is 30%. The probability of being winter is 50%. The probability that it will be shiny is 70%. Show construct a belief network for this example. [2+3]
  5. What is expert system? Explain the major components of Expert System?
  6. How minimax algorithm is used in game search. For the following state space, show how mini-max algorithm finds path for the two players. [2.5+2.5]
- 
7. How knowledge is represented using semantic networks? Illustrate with an example. [5]
  8. What is supervised learning? Discuss how Naïve Bayes model works?
  9. Construct PEAS framework for following intelligent agents.
    - a. Internet Shopping Assistant
    - b. English Language Tutor

**Section C**  
**Long Answer Questions**

**Attempt any Two**  
 **$10 \times 2 = 20$** )

[ $2 \times 10 = 20$ ]

1. What do you mean by heuristic search? Given following state space representation, show how greedy best first and A\* search can be used to find the goal state. [2+8]



S is the start state and G is the goal state. The heuristics of the states are  $h(S)=12$ ,  $h(A)=8$ ,  $h(D)=6$ ,  $h(B)=7$ ,  $h(I)=6$ ,  $h(J)=4$ ,  $h(C)=5$ ,  $h(E)=2$ ,  $h(F)=0$ .

How resolution algorithm is used as a rule of inference in predicate logic? Convert following sentences into FOPL. [4+6]

All over smart person's are stupid

Children's of all stupid persons are naughty

Roney is Children of Harry

Harry is over smart

3. Prove that "Roney is naughty" using resolution algorithm.

What is Artificial Neural Network? Define its mathematical model.

Discuss how back propagation algorithm is used to train ANN? [1+2+6]

Good Luck

Mahendra multiple campus Nepalgunj



Mahendra Multiple Campus Nepalganj  
Bachelor of Computer Application  
Faculty of Humanities and Social Sciences

Pre-Board Examination  
2023 (2079 BS)

Course Title: Artificial Intelligence  
Code No: CACS410  
Semester: VII

Full Marks: \_\_\_\_\_  
Pass Marks: \_\_\_\_\_  
Time: 3 hours

Name: \_\_\_\_\_

Roll No: \_\_\_\_\_

*Candidates are required to answer the questions in their own words as far as possible.*

**Attempt All the questions.**

**Group A**

[10×1=10]

1. Circle (O) the best answer
- i). Among the given options, which is also known as inference rule?  
  - a) Reference
  - b) Reform
  - c) Resolution
  - d) None of the above
- ii). What is the field of Natural Language Processing (NLP)?  
  - a) Computer Science
  - b) Artificial Intelligence
  - c) Linguistics
  - d) All of the mentioned
- iii). In which ANN, loops are allowed?  
  - a) FeedForward ANN
  - b) FeedBack ANN
  - c) Both 'a' and 'b'
  - d) None of the Above
- iv). The component of an Expert System is .....  
  - a) Knowledge Base
  - b) Inference Engine
  - c) User Interface
  - d) All of the above
- v). The PEAS in the task environment is about.....  
  - a) Peer, Environment, Actuators, Sense
  - b) Performance, Environment, Actuators, Sensors
  - c) Perceiving, Environment, Actuators, Sensors
  - d) None of the Above
- vi). An AI agent perceives and acts upon the environment using.....  
  - a) Sensors
  - b) Perceiver
  - c) Actuators
  - d) Both a and c
- vii). Which rule is applied for the Simple reflex agent?  
  - a) Simple-action rule
  - b) Simple and Condition-action rule
  - c) Condition-action rule
  - d) None of the above

**Humanities and Social Sciences**  
*Bachelor of Computer Application*  
**Mahendra Multiple Campus Nepalganj**

Pre-board Examination  
2023 (2079 BS)

**Course Title:** Artificial Intelligence  
**Code No:** CACS410  
**Semester:** VII

**Full Marks:** 60  
**Pass Marks:** 24  
**Time:** 3 hours

*Candidates are required to answer the questions in their own words as far as possible.*

**GROUP-B**

**C**omplete Any Six questions.

[ $6 \times 5 = 30$ ]

2. Describe how Turing Test is used to define AI as acting humanly?
3. Explain the types of Agents.
4. What do you mean uninformed search. Explain
5. Explain Mini-max Search algorithm.
6. Difference between depth first search and breadth first search.
7. How knowledge is represented using semantic networks? Illustrate with example.
8. What is Expert system? Explain the major component of Expert system?

**GROUP-C**

**C**omplete any Two questions.

[ $2 \times 10 = 20$ ]

9. What do you mean by AI? What are the application of AI? Describe with suitable example.
10. What is Natural Language Processing? Describe the steps of Natural Language Processing. Also illustrate its limitations.
11. What is Artificial Neural Network? Define its mathematical model. Also difference between supervised and unsupervised learning.

**Best of Luck**

# Nagajun college

