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**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

TEST 1

Winter Semester: 2021 - 22

Course Code: CSE3006

Course Name: Artificial Intelligence and Neural Networks

Program & Sem: B.Tech & IV sem

Date: 11/05/2022

Time: 11:00-12:00pm

Max Marks: 30

Weightage: 15%

Instructions:

(i) Read the all questions carefully and answer accordingly.

Part A

Answer all the Questions. Each question carries two marks. (4Qx 2M=8M)

Q.NO.1 Define an Agent in AI and any two terminologies associated with it. [2M] (C.O.No.1) [L1]

Q.NO.2 Exemplify why AI can be a "Cause of Concern" in the future. [2M] (C.O.No.1) [L1]

Q.NO.3 Compare and contrast Goal Based and Model Based Agents [2M] (C.O.No.1) [L1]

Q.NO.4 According to the Turing Test analysis, determine the capabilities a computer should possess to Act Humanly. [2M] (C.O.No.1) [L1]

Part B

Answer all the Questions. Each question carries six marks. (2Qx6M=12M)

Q.NO.5 Explain Frame structure of Knowledge representation. Write the Class and the Instance frame structure for representing student Information. [6M] (C.O.No.1) [L2]

Q.NO.6 Describe KBS architecture. Also explain how an AI systems can be used to predict a product rating in shopping sites. [6M] (C.O.No.1) [L2]

Part C

Answer all the Questions. Each question carries ten marks. (1Qx10M=10M)

Q.NO.7. For the following set of statements

- It is not sunny this afternoon and it is colder than yesterday
- We will go to swimming only if it is not sunny
- If we do not go to swimming then we can take a canoe trip
- If we take a canoe trip then we will be home by sunset.

1. Identify the propositional variables and represent each statement using logical connectives [3M]

2. Express the statement (a) into its DeMorgan's Equivalent. [2M]

3. Identify which rules of inference is applicable to statements (c) and (d) and determine what will the conclusion. [2M]

4. Construct a truth table for the compound proposition $(p \rightarrow q) \wedge (q \rightarrow \neg p)$ [3M]



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**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

TEST 1

Winter Semester: 2021-22

Course Code: CSE 3006

Course Name: Artificial Intelligence and Neural Networks

Program & Sem: B.Tech (CSE)-4th Sem

Date: 27/04/2022

Time: 11:30AM to 12:30PM

Max Marks: 30

Weightage: %15

Instructions:

- (ii) Read the all questions carefully and answer accordingly.
(iii) All Questions are Mandatory.

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries TWO marks.

(4Qx 2M=8M)

1. Write down the composition of an Agent. (C.O.No.1) [KNOWLEDGE]
2. Which Agent does not have a Storage capability? (C.O.No.1) [KNOWLEDGE]
3. Differentiate between Conceptual Graph and Semantic Network. (C.O.No.1) [KNOWLEDGE]
4. State Knowledge based system with a diagram. (C.O.No.1) [KNOWLEDGE]

Part B [Thought Provoking Questions]

Answer both the Questions. Each question carries SIX marks.

(2Qx6M=12M)

5. Write the converse, inverse and contrapositive for the following english sentence "if Sandra finishes her work then she will go to the basketball game". Use Preposition Logic.
(C.O.No.1) [COMPREHENSION]
6. Consider that there are 50 students in a classroom. The class teacher observes that few students are irregular to class and gives a warning to not repeat it. Identify the three components of data, information and knowledge in above scenario which teacher will have? Also, Classify different knowledge types.
(C.O.No.1) [COMPREHENSION]

Part C [Problem Solving Questions]

Answer the Question. The question carries 10 marks.

(1Qx10M=10M)

7. Answer both the parts below.

(C.O.No. 1) [APPLICATION]

a. Represent the following sentences in a semantic network:

- Tweety and Sweety are birds.
- Tweety has a red beak.
- Sweety is Tweety's child.
- A crow is a bird.
- Birds can fly.

b. Convert following English sentence into Propositional Logic :

Let P = It is raining

Q = Mary is sick

A) It is raining, when Mary is Sick

B) It is not the case that Mary isn't sick



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**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

TEST 2

Winter Semester: 2021 - 22

Course Code: CSE 3006

Course Name: Artificial Intelligence and Neural Networks

Program & Sem: B.Tech & IV sem

Date: 2nd June 2022

Time: 11:30 AM to 12:30 PM

Max Marks: 30

Weightage: 15%

Instructions:

- (i) *Read the all questions carefully and answer accordingly.*
-

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries TWO marks.

(4Qx 2M=8M)

Q.NO.1 Express Inductive reasoning with an example.

(C.O.No.2) [L1]

Q.NO.2 Write the First order logic representation for the statement “Every student in this class has visited Africa or America”.

(C.O.No.1)[L1]

Q.NO.3 List informed search algorithms and write one difference between the two. (C.O.No.2) [L1]

Q.NO.4 List different types of reasoning.

(C.O.No.2) [L1]

Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries SIX marks.

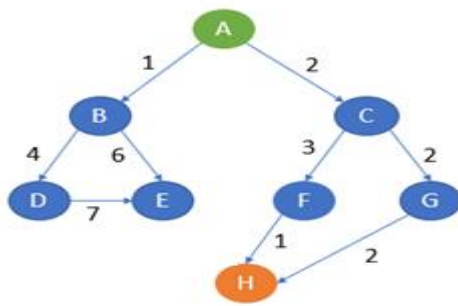
(2Qx6M=12M)

Q.NO.5 Explain state space representation of a problem. Also, write the state space solution for the following problem

“You are given two jugs, a 5-gallon one and a 3-gallon one. Neither has any measuring mark on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 4 gallons of water into the 5-gallon jug? That 3 gallon jug should be empty”.

(C.O.No.2) [L2]

Q.NO.6 Determine the algorithm that uses path cost and heuristic cost to find the best path. Also, implement the same to find the best path to reach from source A to destination H for the given graph below.



NODES	HEURISTICS
A	5
B	3
C	4
D	2
E	6
F	3
G	1
H	0

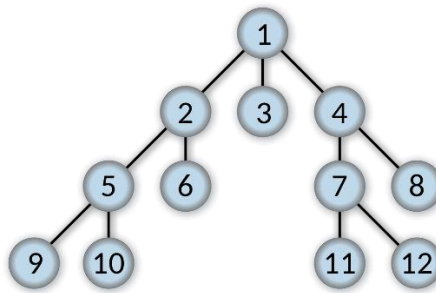
(C.O.No.2) [L2]

Part C [Problem Solving Questions]

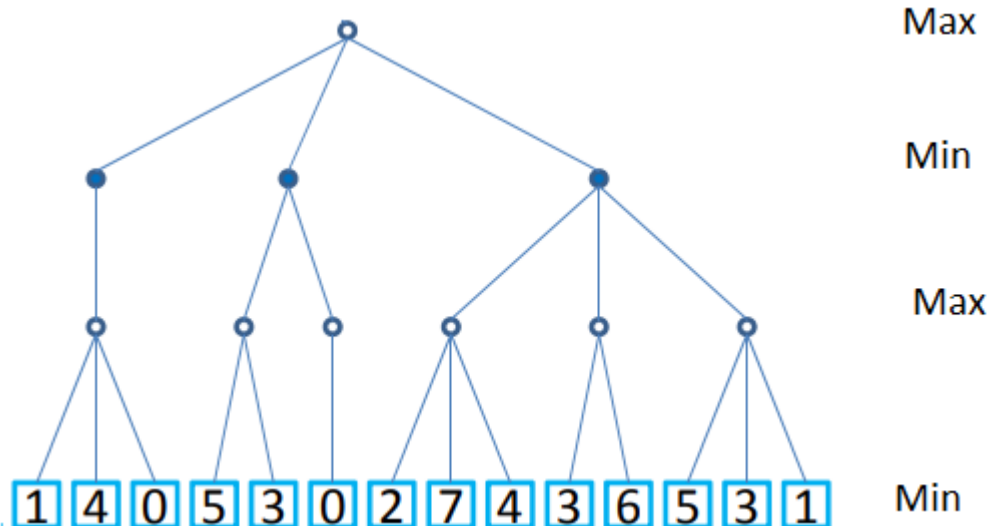
Answer the Question. The question carries ten marks.

(1Qx10M=10M)

Q.NO.7.a. List at least 4 differences between BFS and DFS algorithms. Also, list the nodes in the order of visit using BFS and DFS traversal for the following graph. **[6M]**(C.O.No.2) [L2]



b. Explain MinMax algorithm and perform the same on the following tree to find the score at the root node. **[4M]** (C.O.No.2) [L2]





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**PRESIDENCY UNIVERSITY
BENGALURU
SCHOOL OF MANAGEMENT**

END TERM EXAMINATION

Winter Semester: 2021-22

Course Code: CSE 3006

Course Name: Artificial Intelligence & Neural Network

Program & Sem: B.Tech & IV Sem

Date: 30th June 2022

Time: 09:30 AM to 12:30 PM

Max Marks: 100

Weightage: 50%

Instructions:

(iv) Read the all questions carefully and answer accordingly.

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries SIX marks.

(5Qx 6M=30M)

- 1) Define the following Terms i) Artificial Intelligence ii) Agent iii) Percept Sequence
(CO.No.1)[Knowledge]
- 2) List any three applications of Artificial Neural Networks (ANN).
(CO.No.3)[Knowledge]
- 3) Differentiate between supervised and unsupervised learning?
(C.O.No.4)[Knowledge]
- 4) Discuss types of Quantifiers? Ordering of quantifier is important in FOL in which scenario.
(CO.No.2)[Knowledge]
- 5) Write the name of three activation function which can be used in perceptron with their formulas.
(CO.No.4) [Knowledge]

Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries TEN marks.

(4Qx10M=40M)

- 6) Differentiate between Inductive, abductive and Deductive reasoning with example of each.
(CO.No.3) [Comprehension]
- 7) Implement AND gate and OR gate Using a Perceptron (Neuron) where Initial weights $w_1 = 1.1$, $w_2 = 0.6$, Threshold = 1 and Learning Rate $n = 0.5$ are given. Use Threshold function. Show steps.
(CO.No.4) [Comprehension]
- 8) Explain Turing test. Differentiate between goal based agent and simplex agent.
(CO.No.1) [Comprehension]
- 9) Explain Bayes theorem. 1% of a population has a certain disease and the remaining 99% are free from this disease. A test is used to detect this disease. This test is positive in 95% of the people with the disease and is also (falsely) positive in 2% of the people free from the disease. If a person, selected at random from this population, has tested positive, what is the probability that she/he has the disease? Use Bayes theorem to solve this. (CO.No.2) [Comprehension]

Part C [Problem Solving Questions]

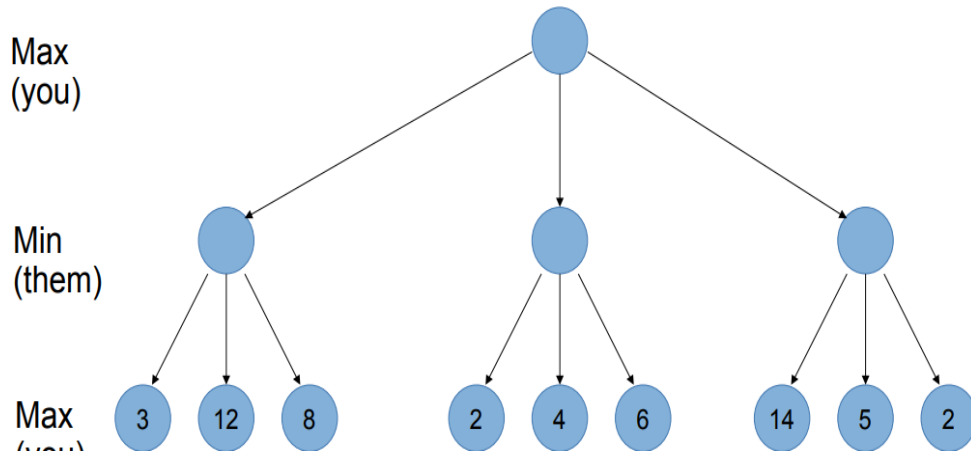
Answer both the Questions. Each question carries FIFTEEN marks.

(2Qx15M=30M)

10) [15] (CO.No.2) [Application]

A) Describe need for alpha beta pruning, mention conditions for pruning. [5]

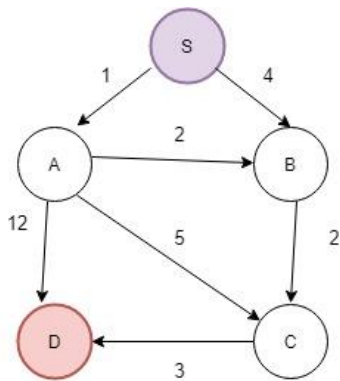
B) Perform Alpha Beta pruning, Draw final graph, update node values, and indicate pruned branches with alpha beta values. Show each step properly. [10]



11. Answer both the parts below.

(C.O.No. 1) [APPLICATION]

A. Solve the below mentioned graph using A star search algorithm. Show each step. [10]



HEURISTIC VALUE	
S	7
A	6
B	2
C	1
D	0

B. Convert Below statement into First order Logic(FOL) statement.

[5]

1. John likes all kind of food.
2. Apple and vegetable are food.
3. Anything anyone eats and not killed is food.
4. Anil eats peanuts and still alive.
5. Harry eats everything that Anil eats.