

Title of Paper: **Artificial Intelligence**

Paper: VII

1.Objective Question

1 What is Artificial intelligence?

- a) Putting your intelligence into Computer
- b) Programming with your own intelligence
- c) Making a Machine intelligent
- d) Playing a Game

2. Who is the “father” of artificial intelligence?

- a) Fisher Ada
- b) John McCarthy
- c) Allen Newell
- d) Alan Turning

3 Which values are independent in minimax search algorithm?

- a) Pruned leaves x and y
- b) Every states are dependant
- c) Root is independent
- d) None of the mentioned

4. Which search is similar to minimax search?

- a) Hill-climbing search
- b) Depth-first search
- c) Breadth-first search
- d) All of the mentioned

5. Which value is assigned to alpha and beta in the alpha-beta pruning?

- a) Alpha = max
- b) Beta = min
- c) Beta = max
- d) Both Alpha = max & Beta = min

6. There exist only two types of quantifiers, Universal Quantification and Existential Quantification.

- a) True
- b) False

7. What is state space?

- a) The whole problem
- b) Your Definition to a problem
- c) Problem you design
- d) Representing your problem with variable and parameter

8. A search algorithm takes _____ as an input and returns _____ as an output.

- a) Input, output
- b) Problem, solution
- c) Solution, problem
- d) Parameters, sequence of actions

9. A problem in a search space is defined by one of these state.

- a) Initial state
- b) Last state
- c) Intermediate state
- d) All of the mentioned

10. What are Semantic Networks?

- a) A way of representing knowledge
- b) Data Structure
- c) Data Type
- d) None of the mentioned

11. What is the frame?

- a) A way of representing knowledge
- b) Data Structure
- c) Data Type
- d) None of the mentioned

12. Frames in artificial intelligence is derived from semantic nets.

- a) True
- b) False

13. Which of the following elements constitutes the frame structure?

- a) Facts or Data
- b) Procedures and default values
- c) Frame names
- d) Frame reference in hierarchy

14. What kind of clauses are available in Conjunctive Normal Form?

- a) Disjunction of literals
- b) Disjunction of variables
- c) Conjunction of literals
- d) Conjunction of variables

15. Which of the following is an extension of the semantic network?

- a) Expert Systems
- b) Rule Based Expert Systems
- c) Decision Tree Based networks
- d) Partitioned Networks

16. Semantic Network represents _____

- a) Syntactic relation between concepts
- b) Semantic relations between concepts
- c) All of the mentioned
- d) None of the mentioned

17. What are the limitations of the semantic networks?

- a) Intractability
- b) Lack in expressing some of the properties
- c) Incomplete
- d) Has memory constraints

18. Semantic Network is also known as Frame networks.

- a) True
- b) False

19. Which algorithm will work backward from the goal to solve a problem?

- a) Forward chaining
- b) Backward chaining
- c) Hill-climb algorithm
- d) None of the mentioned

20. What is the other name of informed search strategy?

- a) Simple search
- b) Heuristic search
- c) Online search
- d) None of the mentioned

21. A sentence is -----if it is true in all interpretations.

- (a) satisfiable
- (b) Valid
- (c) Model
- (d) inference

22. A frame is an extension to -----

- (a) semantic network
- (b) CD
- (c) frame
- (d) AI

23. CD means

- (a) conceptual depth
- (b) largest common subsequence
- (c) conceptual dependency
- (d) none

24. Rote learning is also called as-----

- (a) activity
- (b) forward
- (c) chain
- (d) Memorization

25. EBL stands -----

- (a) Explanation based learning
- (b) Expert base learn
- (c) Expert balance learn
- (d) none

ANSWER IN ONE SENTENCE

1. Define AI

2. How many tasks in AI? which?

3. Define Knowledge.

4. Define fact.

5. Define model.

6. Define Validity.

7. Define Satisfiability.

8. Write CYC motivation.

9. State any 2 AI techniques.

10. State the significance of alpha cutoff in alpha beta pruning.

11. "Intelligence requires knowledge" State any 2 undesirable properties of knowledge.

12. Distinguish between knowledge and data.

13. Define search strategy.

14. State any two applications of AI.

15. Give CD representation of state

 "John took the book from Mary".

16. Discuss the problem in MINIMAX algorithm using alpha-beta cutoffs.

17. Define requirements of a good control strategy.

18. Describe any 2 characteristics of a problem with an example.

19. Define Inference.

20. State Bayes rule.

21. Define goal of AI.
22. Define Ridge
23. Define Plateau.
24. Define local maxima
25. State types of AI.
26. Give example of AI.
27. Define State Space search problem.
28. Types of Uniformed search.
29. Types of Hill climbing.
30. Write a formula for A* algorithm to calculate total path to reach the goal.
31. Types of Knowledge.
32. Types of quantifiers.
33. Define Resolution

SHORT NOTE ON

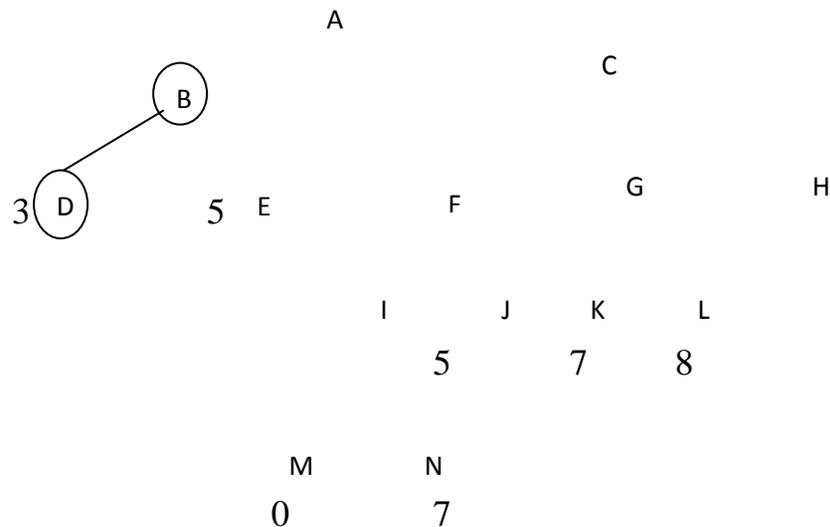
1. Write short on production system.
2. Write short on hill climbing.
3. Write short note on SA.
4. Write short note on problem reduction.
5. Write note on CD.
6. Write note on Script.
7. Write a short note on role learning.
8. Write a short note on Explanation based learning.

9. Write note on the component of Script.
10. Write short note on frames.
11. Write note on learning by parameter adjustment.
12. Write note on Production System
13. Write note on limitation of hill climbing.
14. Write note on state space search problem.
15. Write note on search and control strategies.
16. Write note on Generate and test.
17. Write note on best first search.
18. Write note on Constraint Satisfaction.

SHORT ANSWER QUESTION

1. How many techniques in AI? Explain?
2. Explain generate and test.
3. Explain hill climbing.
4. Explain best first search.
5. Explain problem reduction.
6. Explain constraint satisfaction.
7. Explain Means end analysis.

8. Explain disadvantages of hill climbing?
9. Explain Approaches to knowledge representation?
10. Explain Rote learning.
11. Explain Learning by taking advice.
12. Define forward and backward chaining. Differentiate between any two.
13. Consider the following game tree



Perform a left-to-right alpha-beta pruning on the tree. Indicate where the cut-offs occur.

14. State limitation of Semantic network.
15. Explain the MINIMAX search procedure.
16. Explain generate and test strategy of problem solving.
17. Explain AO* algorithm.
18. Difference between universal quantifiers and existential quantifier.
19. How resolution works.

20.Explain Motivation of CYC.

LONG ANSWER QUESTION

1.Explain AI and related field?

2.Solve cryptarithmic problem SEND+MORE=MONEY

3.Explain problem characteristics.

4.How many types of hill climbing?Explain?

5.Solve by using forword and backward chaining

(i)it is crime for an American to sell weapons to the enemy of America

(ii)country nono is an enemy of America

(iii)nono has some missiles

(iv)All the missiles were sold to nono by colonel

(v)missile is a weapan

(vi)colonel is American

We have to prove colonel is a criminal

6.State the advantages and disadvantages of an Expert system.

7.Describe AO* algorithm

8.Convert following statement into WFFs

(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 heat him

(vi) Every one is loyal to someone.

9. Compare Script & Frame using Example.

10. Solve cryptarithmic problem CROSS+ROADS=DANGER.

11. Explain Uniformed search with algorithm.

12. Explain any 4 heuristic search techniques.

13. Explain types of knowledge representation

14. Solve by using semantic network

(i) Tom is a cat

(ii) Tom caught a bird

(iii) Tom is owned by john

(iv) Tom is ginger in color

(v) cat like cream

(vi) cat sat on mat

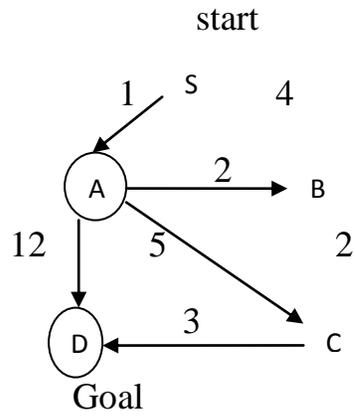
(vii) the cat is mammal

(viii) a bird is an animal

(ix) all mammals are animals

(x) mammals have fur

15. Solve by using A* algorithm



Heuristic value $S=7, A=6, B=2, C=1, D=0$