Nagarjuna Degree College
38/36, Ramagondanahalli,
Yelahanka Hobli.
Bengaluru - 560 064.

15526

Reg. No. ☐☐☐☐☐☐☐☐

V Semester B.C.A. Degree Examination, March/April - 2023

COMPUTER APPLICATIONS

Artificial Intelligence

(CBCS Scheme)

Time : 3 Hours **Maximum Marks : 100**

Instructions to Candidates:

Answer all sections.

SECTION - A

Answer any **TEN** questions. Each question carries 2 marks. (10×2=20)

1. Define Artificial intelligence.

2. In alpha - beta pruning, what alpha and beta represents?

3. Write well formed formula (wff) for the following sentences

    a) Caesar was a ruler

    b) Everyone is loyal to someone

4. What do you mean by conceptual dependency?

5. List any four predicates used in block world problem.

6. Write any two differences between constraint posting and state space search.

7. What are the factors affecting learning performance?

8. Write any two applications of neural network.

9. Define parsing.

10. Write any two limitations of expert systems.

11. Draw semantic not for the following

    a) Rama is taller than Hari

    b) Mouse is a rodent and rodent is a Mammal.
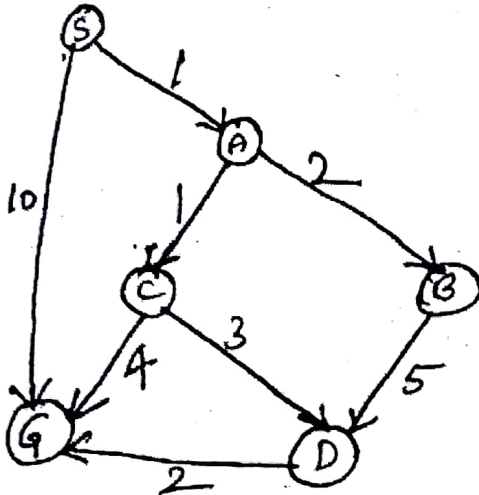
12. What is the basic unit of neural network?

[P.T.O.

SECTION -B

Answer any Five questions. Each question carries 5 marks. (5×5=25)

13. Using A* algorithm find the most cost-effective path from S to G.

Heuristic values	
S	5
A	3
B	4
C	2
D	6
G	0

14. Create a frame of the person Ram who is a doctor. His age is 40. His wife name is Sita. They have two children Babu and Geetha. They live in 100 KPS street in the city of Delhi in India. The zip code is 756005.

15. What is a block world problem? Explain the actions of a block world problem.

16. Explain in detail General learning model.

17. Derive a parse tree for the sentence "The Silly Robot moved the red pyramid to the big table"

Production Rules :

S → NP VP

NP → DET ADJ N

VP → V NP PP

PP → PREP NP
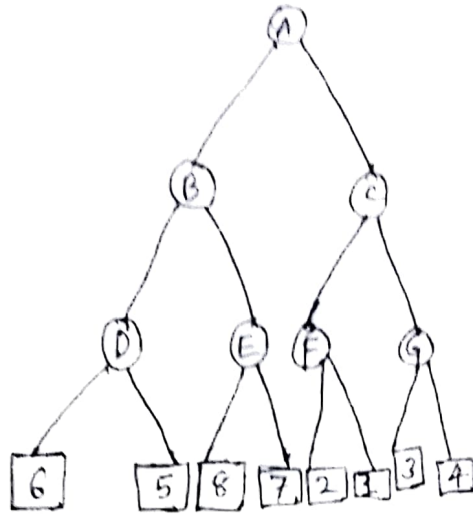
DET → the

ADJ → big/red/silly

N → Robot/Pyramid/table

V → moved

PREP → to

18. Find out the nodes that can be pruned in the following game tree (alpha - beta pruning)

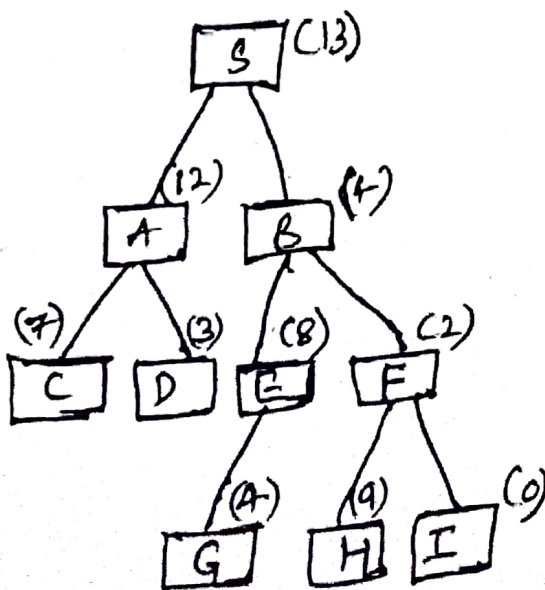**19.** Write a short note on least commitment strategy.

20. Write any five general characteristics of an expert system.

SECTION-C

Answer any Three questions. Each question carries 15 marks.   (3×15=45)

21. a)   Consider the following tree, find the path to reach the goal node I from S using best first search algorithm.   (5)

   b)   Explain Means- end analysis . Write the algorithm for the same.   (10)

22.   a) Represent the following sentences using conceptual dependency

      i) John ate a frog

      ii) John sold his car to bill. (5)

  b) What are the advantages and disadvantages of semantic net. (10)

23. a) Explain Sussman Anomaly (8)

  b) Write non-linear planning algorithm . (7)

24. Write in detail on categories of learning. (15)

25. a) Explain Recursive Transition Networks (RTN) with a neat diagram. (10)

  b) Write a note on applications of expert system. (5)

SECTION- D

Answer any One question. Each question carries 10 marks. (1×10=10)

26. Write a script for the restaurant.

27. Explain any two Robot architectures.