Indian Institute of Information Technology, Sri City, Chittoor

Name of the Subject: **Artificial Intelligence**

Duration: **1.5 hours**

Date: **07-02-2024**

Max Marks: **25**

Read the Instructions before proceeding:

1. This is a **closed-book exam.** You can use **a calculator** if necessary.
2. **Please Write/Draw legibly!** If we can't understand what you have written, we can't grade it.
3. **Don't use Pencils** for answering/drawing. The final answer **must** be in blue or black ink.
4. Mention the question number before the answer.
5. Read the instructions carefully.

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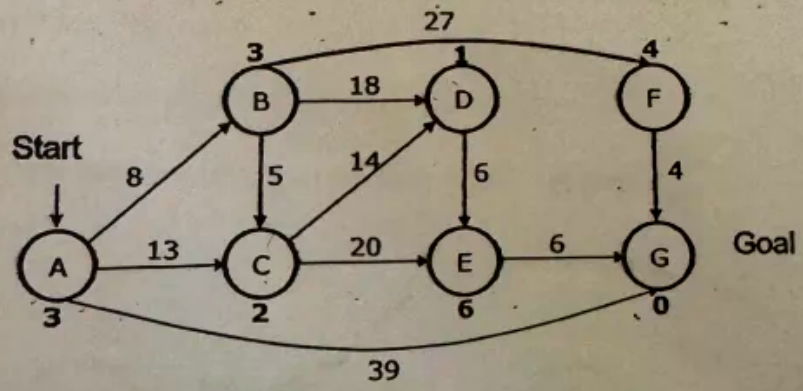
1. a) What is PEAS for grocery store scanners? **(5 Marks)**
   b) Draw a Utility-based reflex agent block diagram and explain with an example **(5 Marks)**

2. Use the following tree to indicate the order in which nodes are expanded, for Greedy Best First Search, and A* search. Assume that G is the only goal node, and A is the initial node. Here, path costs are shown to the right of each path, g = cost of path so far, h = estimate of remaining cost to goal, and f = estimate of total path cost. **(10 Marks; 5 marks for each algorithm)**



Note: Step-by-step expansion needs to be shown, any direct answers will be awarded with zero marks.

3. (a) Satellite Image Analysis System is Fully Observable [True/False]
   (b) The action of the Simple reflex agent completely depends upon _____
   (c) What kind of environment is a crossword puzzle?
   i) Static ii) Dynamic iii) Semi Dynamic iv) None of the mentioned
   (d) What is the heuristic function of greedy best-first search?
   i) f(n) != h(n), ii) f(n) < h(n), iii) f(n) = h(n), iv) f(n) > h(n)
   (e) Out of the given options, which of the following algorithms uses the least memory?
   i) DFS ii) BFS iii) Both DFS and BFS iv) None
   (5 Marks)