SAPTHAGIRI NPS UNIVERSITY
BE 1st Semester End Examination 2024-25
Model question paper

Course Code:24BEPHY106   Semester:1

Course: Fundamentals of AI & ML   SRN:

Time:03Hrs   Max Marks:100

PART A

**Answer any Ten of the following:**   **10x2=20**

1. Define the term Artificial Intelligence.
2. An AI agent of robot vaccum cleaner is to be designed. Describe the PEAS representation for it.
3. Define heuristic function?
4. Compare informed and uninformed search
5. Convert the following sentences into First order logic
   a) "Some boys play cricket"
   b) "All kids like cartoon"
6. Convert the following to Propositional Logic
   a) It is a Saturday and a working day
   b) If it rains, then match will be cancelled
7. Fennec fox is an animal looking similar to a cat. You are provided with a set of images of both. If you want to identify whether the given image is of fennel fox or a cat, choose a machine learning algorithm. Justify your choice.
8. List the uses of decision tree
9. Define Part-of-speech (POS) tagging
10. Enumerate applications of Natural Language Processing.
11. Define n-gram model? List the different types of n-gram models.
12. Describe the term word representation in NLP using an example

PART –B

Answer any Seven of the following: **7x5 =35**

1. Comment on the statement : AI is a boom or a curse.
2. Explain about the turing test approach.
3. Enumerate types of hill climbing algorithms. Brief about each.
4. Joan is a salesperson. As part of his job, he have to visit all the cities mentioned as A, B, C, D,E,F and G as mentioned in Figure. Apply BFS algorithm to find the path. Ensure that he is traversing through all cities.
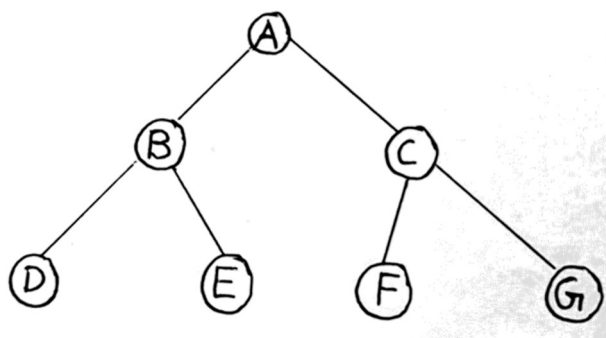
5. Describe unification in First Order Logic with example.
6. Differentiate forward chaining and backward chaining
7. Illustrate and explain machine learning lifecycle.
8. Differentiate regression and classification
9. List and explain the applications of Language model.

PART – C

Answer any Three of the following: **15x3 =45**

1. List the dimensions of Artificial Intelligence? Explain with examples of each.
2. a) Describe A* algorithm.
   b) Assume that Manu want to travel from a city named Sivajinagar(S) to another city named Ekapur(E). The figure shows the roadmap between various cities, where city is represented using its first letter. The numbers marked in Figure represent the distance between the cities in Kilometers and the minimum time(in hours) required to travel from each city to E is mentioned in bold letters. Apply A* algorithm to find the optimal path from S to E.
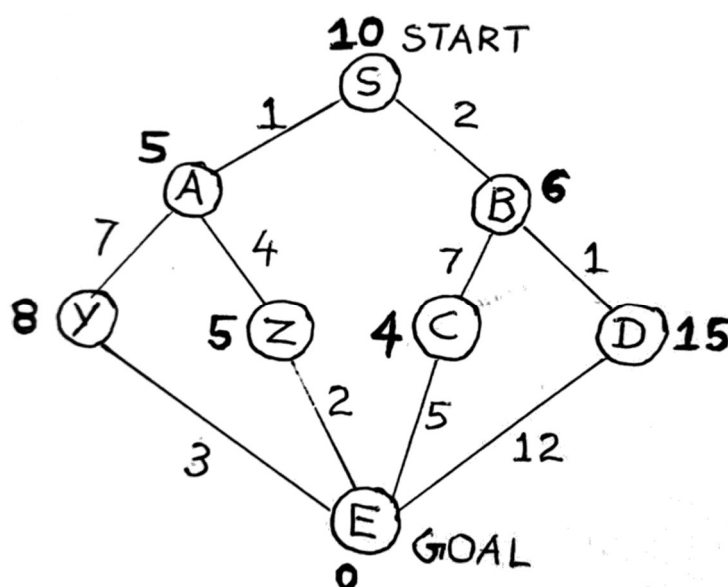
3. Describe First Order logic, its syntax and elements with examples
4. Explain the following with real life application:
   a)Supervised Learning
   b)Unsupervised Learning
   c)Reinforcement Learning

5. Describe Parsing in NLP? Explain the different types of Parsers with examples.