



Kafrelsheikh University



Faculty of Artificial Intelligence

Date: 12/1/2020
Time: 2 Hour **Final Exam (2019/2020)**
No. of Pages: 2 Pages

Subject Code: AI101- Level: 1
Subject Title: Introduction to AI & KR
Total Mark: 60

Question 1 (10 Marks)

1- Define the following:

- A. Artificial intelligence
- B. Agent
- C. Machine learning
- D. knowledge representation

2- Write the difference between:

- A. Computer Vision and Robotics
- B. Strong AI and weak AI

Question 2 (10 Marks)

1- What are results of the next queries?

Statement	Answers
A. $ \?- [abc, def G] = [abc, def, gh].$
B. $ \?- append([h,ello],[world],X).$
C. $ \?- reverse([1,2,3], Z).$
D. $ \?- att(cup1, X) = att(X, white).$
E. $ \?- [cup, bench, kitchen] = [X Y].$
F. $ \?- [c1, on(Y, Z), in(b, k)] = [X, on(X, b) W].$

2- If the definition of pred/3 as the following:

pred(One, List, Res):-
Res = [One | List].

What is the result of the next query?

$|\?- pred(11,[12,13,14,15],Z).$

Question 3 (12 Marks)

- A. What are agent types?
- B. Use a semantic net, frames and logic to represent the following knowledge:

Ahmed is a student. He has laptop for developing his projects. Ahmed is studying python and Java programming languages. His projects may be machine learning or robotics. He does not like using Java in his projects.

- C. From your opinion what is the best way for representing the previous knowledge?

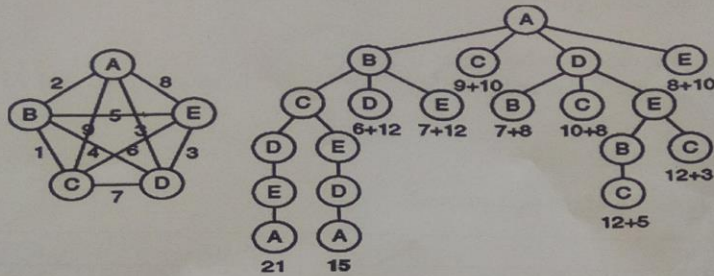
Question 4 (12 Marks)

A. Why do we use search tree?

B. The following figure is TSP representation and search tree solution of the problem. Complete the following about the tree:

- 1- The number of roots is _____, and the number of leafs is _____
- 2- The number of levels is _____, and the number of paths is _____

Define two solutions of the TSP and calculate the minimum cost of the optimal solution.



Question 5 (16 Marks)

A. Can you expand a simple reflex agent to goal based agent? Explain? (2 Marks)

B. If you work as a manager on a robotics company. Your company develops and makes intelligent robots and applications. Someday, one of your company clients requests a robot to help him in the work. The client works as pharmacist (صيدلي). Use the next information to answer the following questions:

The tasks of the robot are:

Sells a medicine (دواء), Enter customer data, Reads prescription (وصفة طبية), cleans the place, Checks the medicine which is not found, and more.

- i. Define the project cycle?
- ii. Draw the agent type and define the PEAS of your project.
- iii. Define the AI technique(s) which are used in your project.

"Concentrate on your dream". Dr. Aida Nasr