

KENYATTA UNIVERSITY
COMPUTER & INFORMATION TECHNOLOGY DEPARTMENT

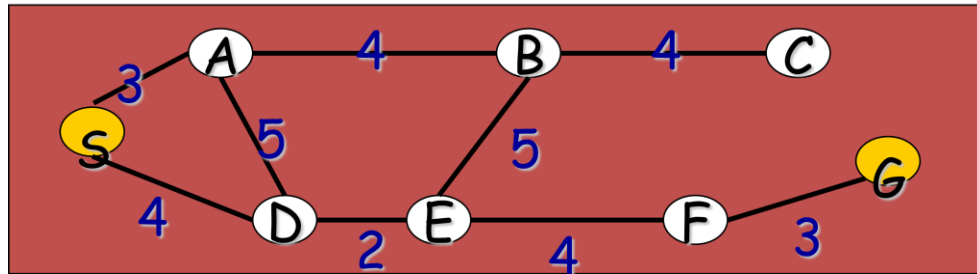
SCO 113: Foundations of Artificial Intelligence

CAT 1

(a) With the aid of a diagram, describe the four (4) approaches to Artificial Intelligence.

[4 Marks]

(b) Given the directed graph below.



(i) Develop its corresponding loop free tree graph.

[2 Marks]

(ii) Conduct a depth first search (DFS) and list the probable solution paths.

[4 Marks]

(iii) Conduct a breadth first search (BFS) and list the probable solution paths.

[4 Marks]

(iv) Compare the performance of DFS and that of CFS in terms of space and time complexity.

[4 Marks]

(c) Three distressed missionaries wish to take three cannibals across a wide river. They are restricted, however, by the following conditions:

- They have only one boat.
- Only 2 people can ride in the boat for each crossing.
- All missionaries but only one cannibal can row the boat.
- There must never be fewer missionaries than cannibals on one side, for the cannibals will feast on the missionaries. (Count any people in the boat when it is on a given side as members of the group on that side).

How do they all cross the river? Develop a representation of the state space and a solution to the problem.

[7 Marks]

(d) Given the self-driving car domain, write a PAGE description of an agent for the environment.

[5 Marks]