



Examiner : Dr. Mustafa M. Shiple  
Subject: Autonomous Multiagent Systems (AI 314)  
Score: 20 Marks

Term: Spring 2023  
Exam Time:60 min

**ANSWER THE FOLLOWING QUESTIONS:**

1. Fill in the spaces [5 marks ] [A<sub>q</sub>,C<sub>a</sub>]
- (a) The environment could be characterized as an Episodic if the agent can decide what action to perform based only on .....
  - (b) The strong AI view holds that it is possible to create intelligent machines that can .....
  - (c) Thinking and acting like human beings are characterized as .....AI.
  - (d) Proactiveness means, intelligent agents are able to exhibit .....
  - (e) intelligent agents are capable of interacting with other agents (and possibly humans) in order to satisfy their design objectives, this called.....

**Solution:**

- (a) current Episode
- (b) give reasons and solve problems (conscious and self-aware)
- (c) weak
- (d) goal-directed behavior.
- (e) Social ability.

2. Choose only one answer for each question [5 marks ] [A<sub>q</sub>,C<sub>a</sub>]
- (a) The environment is called Static when remain unchanged except for the performance of actions by .....
    - A. The agent itself.
    - B. The other agents.
    - C. No matter who is the responsibilities of.
    - D. Outside uncontrolled power.
  - (b) The power of The Subsumption Architecture is.
    - A. Performing their missions in Inaccessible environment .
    - B. Performing their missions in Static environment .
    - C. Performing their missions in Non-Deterministic environment
    - D. Performing their missions in Episodic environment.
  - (c) Discounting technique is a philosophy of.
    - A. negotiation among different agents.
    - B. collaboration among different agents
    - C. optimization for a sake of coordination.
    - D. preferring rewards now to rewards later.
  - (d) Desires database in belief-desire-intention architecture representing
    - A. information the agent has about its current environment;

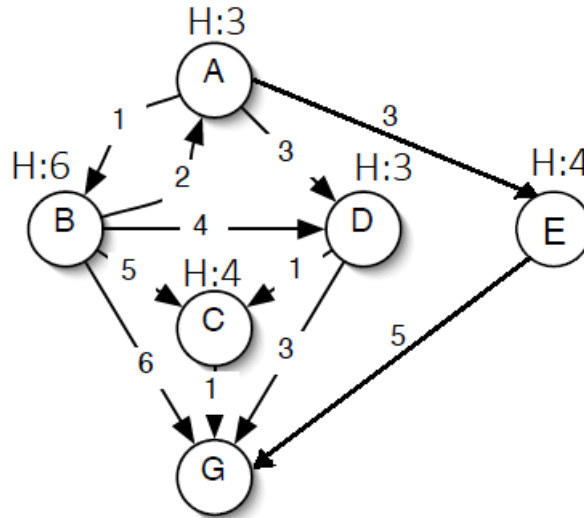
[Total Marks is 20]

- B. possible courses of actions available to the agent.
- C. the agents deliberation process, and which determines the agents intentions.
- D. options available to the agent , based on the basis of its current beliefs about its environment and its current intentions;

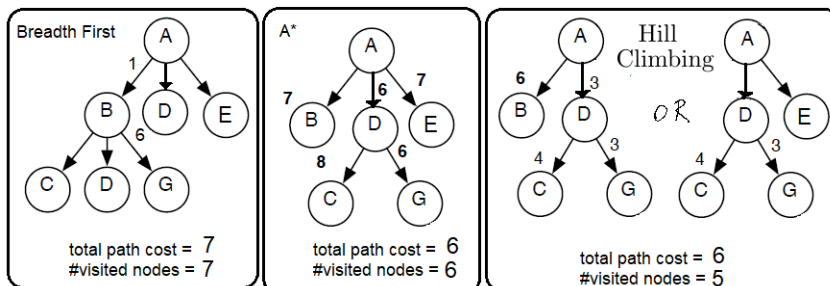
**Solution:**

- (a) The agent itself (A).
- (b) Performing their missions in Non-Deterministic environment(C)
- (c) prefer rewards now to rewards later(D).
- (d) possible courses of actions available to the agent(B)..

3. Consider the graph shown below where the numbers on the links are link costs and the numbers next to the states are heuristic estimates. Let A be the start state and G be the goal state. compare and contrast between Breadth First Search, A\*, and Hill Climbing algorithms, list of visited nodes , total path cost. [10 marks ] [D<sub>c</sub>]



**Solution:**



	Breadth	A*	Hill climbing
complete	yes	yes	no
optimq1 cost	yes	yes	no
memory	high	high	low
local minima	no	no	yes