University of Mumbai

Examinations Summer 2022

93660

Time: 2hour 30 minutes Max. Marks: 80
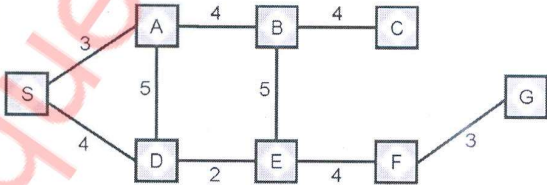
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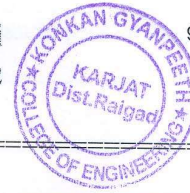
Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	The computer program that simulates the thought process of humans is known as:
Option A:	Expert reason
Option B:	Personal information
Option C:	Expert system
Option D:	Human logic
2.	_____ is the heuristic function of greedy best-first search and _____ is heuristic function of A* Algorithmic search.
Option A:	$F(n) != h(n)$ and $f(n) = h(n) + g(n)$
Option B:	$F(n) = h(n)$ and $f(n) = h(n) + g(n)$
Option C:	$F(n) > h(n)$ and $f(n) = h(n) \, g(n)$
Option D:	$F(n) < h(n)$ and $f(n) = h(n) + g(n)$
3.	The search strategy that uses a problem specific knowledge is known as
Option A:	Heuristic Search
Option B:	Informed Search
Option C:	Best-first Search
Option D:	All of the above Search
4.	In which agent does the problem generator is present?
Option A:	Learning agent
Option B:	Simple-reflex agent
Option C:	Goal based agent
Option D:	Utility based agent

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5.	_____ is the field that investigates the mechanics of human intelligence.
Option A:	Sociology
Option B:	Nurology
Option C:	Cognitive science
Option D:	Psychology

6.	What is present in empty plan?
Option A:	Start
Option B:	Finish
Option C:	Modest
Option D:	Both Start and Finish

7.	Which is the most straightforward approach for planning?
Option A:	Best first search
Option B:	Hill climbing search
Option C:	Depth first search
Option D:	State space search

8.	What are you predicating by the logic $\forall x : \exists y : loyal\_to(x,y)$?
Option A:	Everyone to loyal to all
Option B:	Everyone is loyal to someone
Option C:	Everyone is not loyal to someone
Option D:	Everyone is loyal

9.	Which of the following is not a stage of knowledge engineering?
Option A:	Assemble the relevant knowledge
Option B:	Encode general knowledge about the domain.
Option C:	Identify the task.
Option D:	Fixing a problem.

10.	The father of AI is
Option A:	Alan Turing

Option B:	John McCarthy
Option C:	Russel Stuart
Option D:	Andrew Ng

Q2. (20 Marks)	Solve any Four out of Six 5 marks each
A	Explain WUMPUS world environment giving its PEAS description. Explain how percept sequence is generated.
B	Write a short note on conditional probability and its role in AI.
C	What are the limitations of Hill Climbing Search and how that can be overcome?
D	Explain the concept of Supervised Learning.
E	Convert the following statements into predicate logic 1. All kings are persons. 2. Every city in Maharashtra has temple. 3. An Apple a day keeps doctor away. 4. Anything anyone eats and is not killed by is food. 5. Square of 3 is 9.
F	Explain the steps involved in Natural Language Processing.

Q3. (20 Marks)	Solve any Two Questions out of Three 10 marks each
A	Consider the following facts: 1. Steve only likes easy courses. 2. Science courses are hard. 3. All the courses in the basket_weaving department are easy. 4. BK301 is a basket_weaving course. Find by resolution that "What course would steve like?"
B	List down all agent types. Explain each with block diagram.
C	Apply A* algorithm on the following graph. Heuristic values are h(S) = 15, h(A) = 14, h(D) = 12, h(B) = 10, h(E) = 10, h(C) = 8 , h(F) = 10 , h(G) = 0. S is the start node and G is the goal node.

Q4. (20 Marks)	
A	Solve any Two 5 marks each
i.	Give types of parsing and generate the parse tree for a sentence "*The cat ate the fish*".
ii.	Explain Simulated Annealing with suitable example.
iii.	Differentiate between Informed search and uninformed search Algorithms.
B	Solve any One 10 marks each

i.	What is planning? List types of planning and describe in detail Partial order planning.
ii.	Apply the alpha beta pruning on following example by considering the root node a max.