University of Mumbai

Examinations Summer 2022

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 ∀x :∃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

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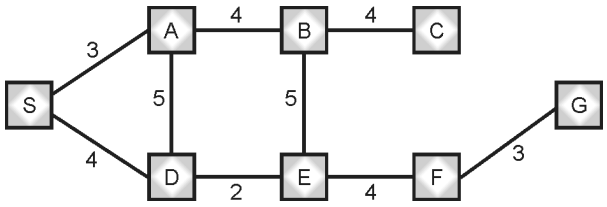
Option B:	John McCarthy
Option C:	Russel Stuart
Option D:	Andrew Ng

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**

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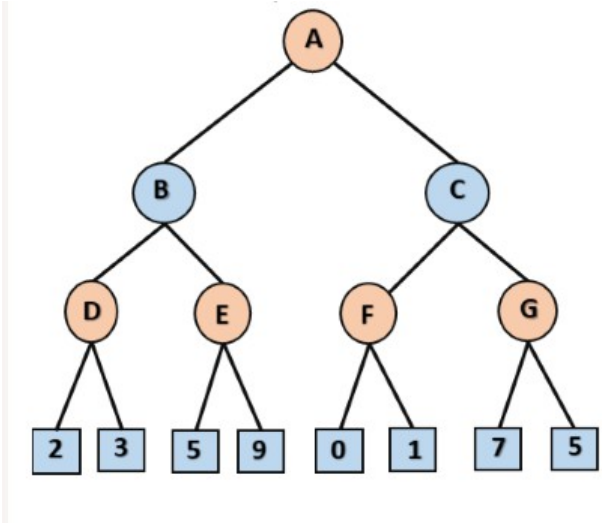
i.	What is planning? List types of planning and describe in detail Partial order planning.
ii.	Apply the alpha beta pruning on following example by considering the root node a max. 

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