AR 20

GIET UNIVERSITY, GUNUPUR – 765022
B. Tech (Fifth Semester – Regular) Examinations, December – 2022
BPCCS5040 – Artificial Intelligence
(CSE)

Time: 3 hrs   Maximum: 70 Marks

Answer ALL Questions
The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)   **(1 x 10 = 10 Marks)**

Q.1. Answer *ALL* questions   [CO#]   [PO#]

a.   The idea of AI originated from_____   CO-1   PO-1

   (i)   Chemical Test   (ii)   Biological Test

   (iii)   Turing Test   (iv)   None of these

b.   Time complexity of BFS is   CO-2   PO-2

   (i) $O(bd)$ (ii) $O(b^d)$

   (iii) $O(d^b)$ (iv) $O(b+d)$

c.   Constraint satisfaction is also referred to as   CO-2   PO-1

   (i)   Divide-and-Conquer algorithm   (ii)   Greedy algorithm

   (iii)   Relaxation algorithm   (iv)   None of these

d.   The process of eliminating existential quantifier is known as   CO-3   PO-1

   (i)   Resolution   (ii)   Skolemization

   (iii)   Unification   (iv)   None of these

e.   CD primitive that is used to do mental transfer is ___   CO-3   PO-3

   (i)   ATRANS   (ii)   ATTRANS

   (iii)   PTRANS   (iv)   MTRANS

f.   Which unit makes inference based on current set of beliefs   CO-4   PO-2

   (i)   TMS   (ii)   Inference engine

   (iii)   KB   (iv)   All of these

g.   Game Playing is often called as an ___   CO-2   PO-1

   (i)   Sequential search   (ii)   Informed search

   (iii)   Adversarial Search   (iv)   None of these

h.   ATN stands for   CO-3   PO-1

   (i)   Automated Teller Machine   (ii)   Automatic Truth Machine

   (iii)   Augmented Transition Network (iv) None of these

i.   Rote learning is based on the principle of   CO-1   PO-2

   (i)   Catching   (ii)   Induction

   (iii)   Deduction   (iv)   None of the above

j.   Which of the following is an example of an ES   CO-1   PO-1

   (i)   DENDRAL   (ii)   MYCIN

   (iii)   JAVA   (iv)   Both (i) and (ii)

PART – B: (Short Answer Questions)   **(2 x 10 = 20 Marks)**
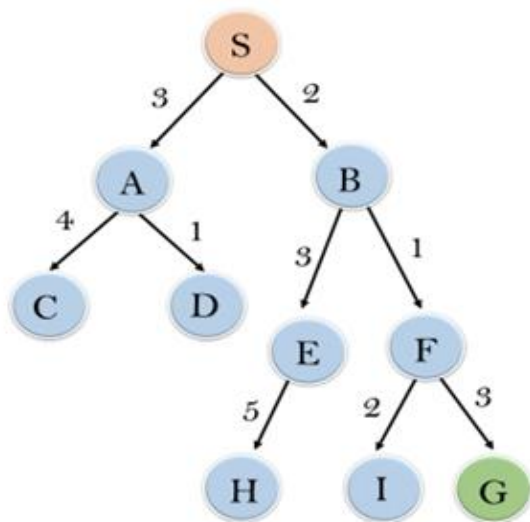
Q.2. Answer *ALL* questions   [CO#]   [PO#]

a.	Define AI? List four applications of Artificial Intelligence?	CO-1	PO-1
b.	What are the limitations of hill climbing problem?	CO-2	PO-2
c.	Define and differentiate between state space and search space?	CO-1	PO-2
d.	Mention the role of TMS in problem solving.	CO-3	PO-1
e.	Represent the sentence "john fertilized the field" in Conceptual dependency (CD)	CO-3	PO-3
f.	How linear planning different from non-linear planning.	CO-4	PO-2
g.	What is Understanding and what makes understanding hard?	CO-4	PO-2
h.	With an example describe Syntactic ambiguity.	CO-1	PO-2
i.	What is the role of learning element in Learning?	CO-3	PO-1
j.	Describe the role of expert system "DENDRAL"	CO-4	PO-1

PART – C: (Long Answer Questions)   **(10 x 4 = 40 Marks)**

Answer *ALL* questions   Marks   [CO#]   [PO#]

3. a.	Using cryptarithmetic problem solve SEND + MORE = MONEY.	5	CO-1	PO-3
b.	Describe the Hill climbing search with its potential problem.	5	CO-1	PO-2

<div align="center">(OR)</div>

c.	Briefly explain about A* algorithm and calculate the cost using A* algorithm, where S is starting state and G is goal state.	5	CO-1	PO-3

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d.	Explain the reduction techniques AND-OR Graph with an example.	5	C0-1	PO-2
4. a.	Assume the following facts. Rama likes only easy course. Engg. Courses are hard. All courses in Arts are easy.AR04 is an Arts course. Using resolution principle answer the question that "What course would Rama like"	5	CO-3	PO-3
b.	Describe Frame with suitable example.	5	CO-3	PO-2

c. Define script. Represent the Restaurant script.   5   CO-3   PO-2

d. What do you mean by resolution?   5   CO-3   PO-3

Consider the following Knowledge Base: prove that It will rain.

1. The humidity is high or the sky is cloudy.

2. If the sky is cloudy, then it will rain.

3. If the humidity is high, then it is hot.
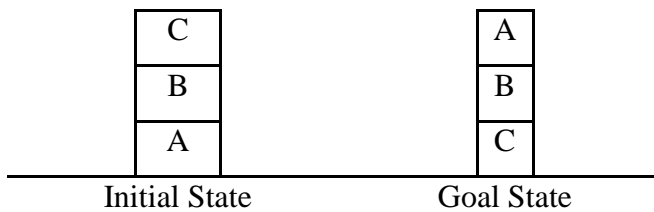
4. It is not hot.

5. a. Describe alpha- beta pruning and using it evaluate the cost at root node. Mention where Cut occurs for following tree.   5   CO-2   PO-2
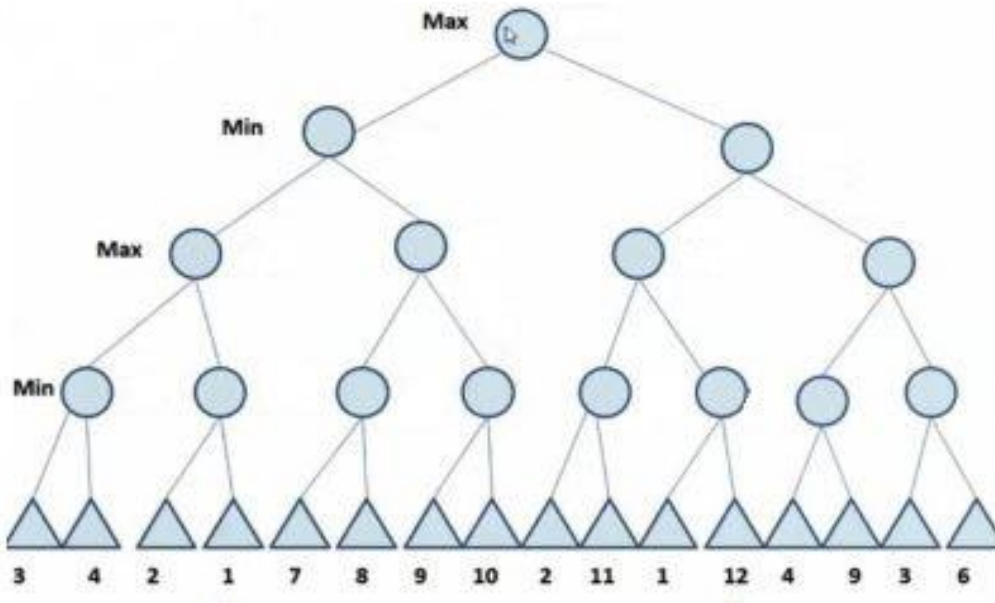
b. Describe the different phase of Natural language processing.   5   CO-2   PO-2

(OR)

c. Explain Goal stack planning. Using the Goal stack planning solve the following.   5   CO-3   PO-3

d. Describe statistical Natural language processing.   5   C0-4   PO-2

6. a. Describe Learning. With a neat diagram describe the different component of learning.   10   CO-4   PO-2

(OR)

b. Describe Expert system. With a neat diagram describe the different component of expert system.   10   C0-4   PO-2

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