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Supplementary (Even Semester) Examination: 2023

Paper Name: Introduction to Artificial Intelligence
Time: 3 Hours

Paper Code: BCA-402
Maximum Marks: 75

SECTION A

All Thirty-Five questions are compulsory Fill up the blanks or answer as True or False. Marking Scheme: 35x1=35

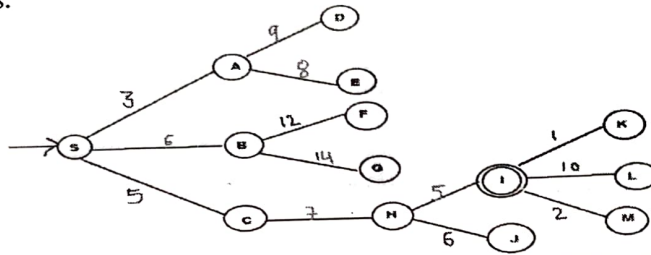
Q.N.	Questions	CO	BL
1	The official birth of AI was at a workshop held at Dartmouth College in the year.....	CO1	L1
2	In Turing Test, interrogators job is to	CO2	L2
3	An agent perceives its environment through actuators and acts upon that environment through sensors. True/False	CO1	L2
4	An agent's percept sequence is the complete history of everything the agent has ever perceived. True/False	CO2	L1
5	The agent function is an abstract mathematical description; the agent program is a concrete implementation, running within some physical system. True/False	CO3	L3
6	PEAS stands for.....	CO1	L2
7	In utility-based agents, a utility function maps a state onto a real number which describes the associated degree of happiness. True/False	CO1	L4
8	In expert systems, knowledge is encoded and maintained as an entity separate from the control program. True/False.	CO1	L1
9	In expert system, inference engine contains rules to solve a specific problem. True/False.	CO1	L1
10	Informed Search is also called blind search. True/False.	CO1	L1
11	Generate and Test Search is an example of uninformed search. True/False.	CO1	L1
12	Best First Search algorithm is based on Informed search. True/False	CO3	L1
13	The data structure conveniently used to implement Breadth First Search (BFS) is	CO4	L4
14	Depth First search strategy guarantee to find an optimal solution. True/False.	CO1	L2
15	Global maximum is a state which is better than its neighboring state however there exists a state which is better than it. True/False	CO1	L1
16	A* search extends the path that minimizes $f(n)=h(n)+g(n)$, where, heuristic function $h(n)$ estimatesand a cost $g(n)$ is the	CO2	L3
17	The means-ends analysis process finds the difference between.....andstates.	CO1	L5
18	The minimax search procedure is depth first, depth limited search procedure. True/False	CO1	L2
19	The main condition required for alpha-beta pruning is: $\alpha \geq \beta$. True/False	CO1	L2
20	In alpha-beta pruning, the Max player will only update the value of alpha. True/False	CO1	L1
21	In knowledge representation, the knowledge elements inherit attributes from their parents.	CO1	L2
22	Inferential Knowledge generates new information from the given information. True/False	CO2	L2
23	"All birds fly". is written in First order logic (FOL) as:	CO3	L6
24	"Some boys play cricket. ". is written in predicate logic as:	CO4	L5
25	$\exists x \forall y$ is similar to $\forall y \exists x$. True/False	CO4	L4
26	$\exists x \exists y$ is similar to $\exists y \exists x$. True/False.	CO1	L2
27	Formulae to calculate posterior probability $P(A/B)$ using Bayes theorem is.....	CO1	L3
28	Two types of Planning areand	CO2	L2
29	Bayesian Network consists of Directed Acyclic Graph and Table of Conditional Probabilities. True/False	CO1	L6
30	Perceptron is called basic building block of artificial neural network. True/False	CO1	L1
31	Different forms of learning are _____, _____, and _____.	CO1	L1
32	Components of Natural Language Processing are and	CO3	L2
33	The learning technique based on repetition where knowledge, without any modification is, simply copied into the knowledge base is termed as deduction. True/False	CO1	L2
34	Supervised learning is defined as.....	CO1	L1
35	Morphological analysis means.....	CO1	L2

SECTION B

Marking scheme: 4x5=20

Attempt any **FOUR** questions out of **SIX**

Q.N.	Questions	CO	BL
1	What is Artificial Intelligence (AI). Write some applications and scope of AI.	CO2	L1
2	Explain the water jug problem and its solution using production rules.	CO3	L4
3	Differentiate between the following. a) Informed search vs. Brute force Search b) Human Expert vs. Artificial Expert	CO1	L2
4	What is an Intelligent Agent? Explain simple reflex agent with diagram.	CO1	L1
5	What is Best First Search Algorithm. Explain the Best First Search considering the following example given S is the start node and I is the goal node, and the edge labels represent cost between the nodes.	CO4 CO3	L3 L5
6	What is Natural Language Processing? Explain the morphological, syntactic, and semantic phases of natural language processing.	CO2	L2



SECTION C

Marking scheme: 2x10=20

Attempt any **TWO** questions out of **FOUR**

Q.N.	Questions	CO	BL
1	Answer the following: a) What are various types of Knowledge. b) Explain various approaches of knowledge representation with example.	CO3	L2 , L3
2	Consider the following game tree a) Use the Minimax to compute the value of each node in the game tree. b) List the nodes that are evaluated by Alpha-Beta. Indicate all parts of the tree that are cut off, and indicate the winning path or paths.	CO4	L3 , L4 , L6
3	Write short note on the following: a) Means End Analysis b) Expert System c) Task Environment d) Decision Tree e) Parsing	CO1	L1
4	Harry installed a new burglar alarm at his home to detect burglary. The alarm reliably responds at detecting a burglary but also responds for minor earthquakes. Harry has two neighbors David and Sophia, who have taken a responsibility to inform Harry at work when they hear the alarm. David always calls Harry when he hears the alarm, but sometimes he got confused with the phone ringing and calls at that time too. On the other hand, Sophia likes to listen to high music, so sometimes she misses to hear the alarm. Calculate the probability that alarm has sounded, but there is neither a burglary, nor an earthquake occurred, and David and Sophia both called the Harry. (Let's assume all the probabilistic values)	CO4	L3 , L5 , L6

Bloom's Taxonomy Levels: (1-Remembering, 2-Understanding, 3-Applying, 4-Analysing, 5-Evaluating, 6-Creating); CO: Course Outcome.

*** END ***