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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

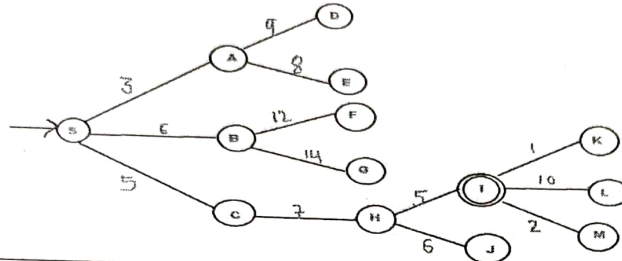
Q.N.	Questions	CO	BL
1	_____ is called the father of Artificial Intelligence.	CO1	L1
2	To conduct Turing Test, we need three players, and	CO2	L2
3	Agent=Architecture + Program. True/False	CO1	L2
4	An agent's percept sequence is the complete history of everything the agent has ever perceived. True/False	CO2	L1
5	An intelligent agent perceives its environment via sensors and acts rationally upon that environment with its effectors/actuators. True/False	CO3	L3
6	, and are known as task environments.	CO1	L2
7	In expert systems, knowledge is encoded and maintained as an entity separate from the control program. True/False	CO1	L4
8	In an expert system, Inference engine contains rules to solve a specific problem. True/False.	CO1	L1
9	A state space consists of representation of states the system can be in, set of operators that can change one state to another, an initial state, and a set of final states. True/False.	CO1	L1
10	Uninformed Search is also called brute-force search. True/False.	CO1	L1
11	Hill Climbing is an example of uninformed search. True/False.	CO1	L1
12	A* algorithm is based on _____ search.	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 centres around finding the difference between current state and goal state. True/False	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: $\alpha \leq \beta$. True/False	CO1	L2
20	Knowledge about the other types of knowledge is called Meta-knowledge. True/False	CO1	L1
21	In the inheritable knowledge approach, all data must be stored into a hierarchy of classes. True/False	CO1	L2
22	Inferential Knowledge generates new information from the given information. True/False	CO2	L2
23	"Some boys are intelligent". is written in First order logic (FOL) as:	CO3	L6
24	"All man drink coffee". 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	When the available knowledge has multiple causes leading to multiple effects or incomplete knowledge of causality in the domain, we say it as uncertain knowledge. True/False.	CO1	L2
27	Formulae to calculate posterior probability $P(A B)$ using Bayes theorem is.....	CO1	L3
28	The execution of planning is choosing a sequence of actions with a high likelihood to complete the specific task. True/False.	CO2	L2
29	Bayesian Network consists of Directed Acyclic Graph and Table of Conditional Probabilities. True/False	CO1	L6
30	 is called basic building block of artificial neural network.	CO1	L1
31	Different forms of learning are _____, _____, and _____.	CO1	L1
32	Components of Natural Language Processing areand	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

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

Marking scheme: 4x5=20

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) Heuristic search vs. Blind Search b) Conventional System vs. Expert System	CO1	L2
4	What is an Agent? What are various kinds of agents. Explain any one 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

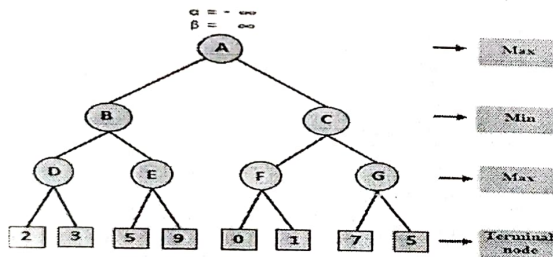


SECTION C

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

Marking scheme: 2x10=20

Q.N.	Questions	CO	BL
1	Answer the following: a) What do you understand by Knowledge? What are various types of Knowledge Explain b) Explain various approaches of knowledge representation with example.	CO3	L2 , L3
2	Consider the following game tree	CO4	L3 , L4 , L6
3	Write short note on the following: a) Generate and Test method b) Artificial Neural Network c) Intelligent Agent 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)