

Nov – Dec 2017

Duration: 3Hrs

Semester:VII

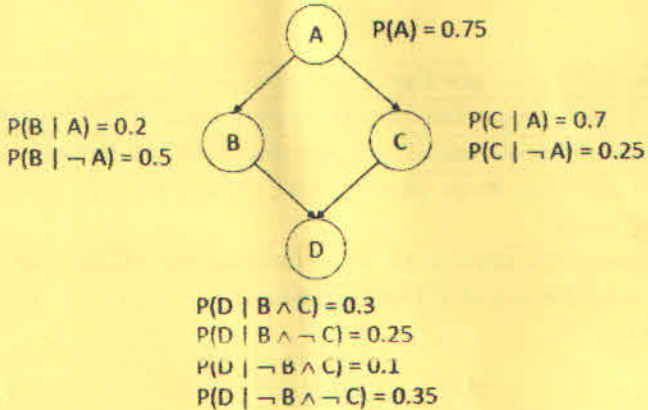
Branch:Computer

Name of the Course: Artificial Intelligence

Instruction:

- (1) All questions are compulsory
- (2) Draw neat diagrams
- (3) Assume suitable data if necessary

Q No.		Max. Marks	CO														
Q.1 (a)	What is AI? What are the approaches of AI.	5	CO1														
(b)	Describe Five properties of task environment with example.	5	CO2														
(c)	What are different quantifier?Describe with the help of example.	5	CO3														
(d)	What is learning from observation? Describe four component of learning agent.	5	CO2														
Q.2 (a)	For a given start state apply hill climbing algorithm using heuristic to find a goal state of 8 puzzle problem. Start state <table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>7</td><td></td><td>8</td></tr></table> Goal State <table><tr><td>4</td><td>1</td><td>3</td></tr><tr><td>2</td><td></td><td>6</td></tr><tr><td>7</td><td>5</td><td>8</td></tr></table> <div>OR</div> <div>What are the various methods to represent domain knowledge in case of expert system.</div>	1	2	3	7		8	4	1	3	2		6	7	5	8	10
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7		8															
4	1	3															
2		6															
7	5	8															

Q.2(c)	Formulate the problem in terms of State space search for following. "Three missionaries and three cannibals are present at one side of a river and need to cross the river. There is only one boat available. At any point of time, the number of cannibals should not outnumber the number of missionaries at that bank. It is also known that only two persons can occupy the boat available at a time."	5	CO3
Q.3 (a)	With the help of diagram discuss structure of Goal based agent. OR Using predicate logic find the course of Ramesh liking for the following i. Ramesh only like easy courses ii. IT courses are difficult iii. Computer courses are easy iv. AOA is a Computer course	10	CO1
Q.3 (b)	<p>i) Describe the different steps required to build belief network. ii) Consider the following Bayesian network.</p>  <p>A, B, C, and D are Boolean random variables. If we know that A is true, what is the probability of D being true?</p>	04 06	CO2

Q.4 (a)	<p>Construct the decision tree for the following set of examples.</p> <table border="1"> <thead> <tr> <th>Age</th><th>Competition</th><th>Type</th><th>Profit</th></tr> </thead> <tbody> <tr><td>Old</td><td>Yes</td><td>Software</td><td>Down</td></tr> <tr><td>Old</td><td>No</td><td>Software</td><td>Down</td></tr> <tr><td>Old</td><td>No</td><td>Hardware</td><td>Down</td></tr> <tr><td>Mid</td><td>Yes</td><td>Software</td><td>Down</td></tr> <tr><td>Mid</td><td>Yes</td><td>Hardware</td><td>Down</td></tr> <tr><td>Mid</td><td>No</td><td>Hardware</td><td>Up</td></tr> <tr><td>Mid</td><td>No</td><td>Software</td><td>Up</td></tr> <tr><td>New</td><td>Yes</td><td>Software</td><td>Up</td></tr> <tr><td>New</td><td>No</td><td>Hardware</td><td>Up</td></tr> <tr><td>New</td><td>No</td><td>Software</td><td>Up</td></tr> </tbody> </table> <p>Write any two decision rules obtained from the tree.</p> <p style="text-align: center;">OR</p> <p>What is Conditional planning .Formulate Vacuum world cleaning problem using conditional planning</p>	Age	Competition	Type	Profit	Old	Yes	Software	Down	Old	No	Software	Down	Old	No	Hardware	Down	Mid	Yes	Software	Down	Mid	Yes	Hardware	Down	Mid	No	Hardware	Up	Mid	No	Software	Up	New	Yes	Software	Up	New	No	Hardware	Up	New	No	Software	Up	10	CO3
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Q.4 (b)	<p>Consider the following tree.</p> <p>Specify alpha and beta condition.</p> <p>Draw left sub tree and right sub tree.</p> <p>What are the advantages ?</p> <div style="text-align: center;"> </div> <p style="text-align: center;">OR</p> <p>Apply greedy search and A* from A to G on following problem. When more than one state have the same key value, place them alphabetically from the left. Stop the trace when the goal is found.</p> <div style="text-align: center;"> </div>	02 06 02	CO2																																												
Q.5 (a)	Describe various techniques used in Natural language Processing.	8	CO5																																												

Q.5 (b)	<p>Consider the following Knowledge Base. Using Forward and backward chaining find the goal.(Represent the inference using tree structure).</p> <p>Knowledge Base:</p> <ul style="list-style-type: none"> i) If [X croaks and eats flies] Then [X is a frog] ii) If [X chirps and sings] Then [X is a canary] iii) If [X is a frog] Then [X is colored green] iv) If [X is a canary] Then [X is colored yellow] v) [Fritz croaks and eats flies] <p>Goal:</p> <p>[Fritz is colored Y]?</p>	12	CO2
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