

set 2

K. J. Somaiya Institute of Technology, Sion, Mumbai-22  
(Autonomous College Affiliated to University of Mumbai)

~~May-June 2024-25~~  
July-Aug 2025

(B. Tech) Program: Computer Engineering, IT and EXTC Scheme: I  
 Course Code: HAIMLC601 And Course Name: Game Theory using AIML  
 Date of Exam: 25/07/2025 Duration: 02.5 Hours Max. Marks: 60

Instructions:  
 (1) All questions are compulsory.  
 (2) Draw neat diagrams wherever applicable.  
 (3) Assume suitable data, if necessary.  
 (4) Scientific Calculator is not allowed.

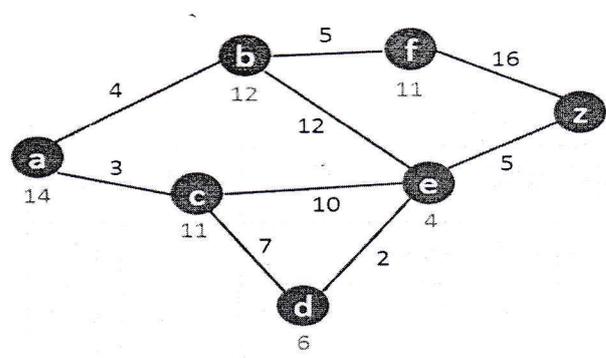
Q. No.	Question	Max. Marks	CO	BT level																							
Q 1	Solve any <b>two</b> questions out of three: (05 marks each)	10																									
a)	Describe some of the applications of game theory with example.		CO1	U																							
b)	Solve the game using Minmax and Maxmin Principle. <table border="1" style="margin: 10px auto;"> <tr> <td colspan="2"></td> <td colspan="3" style="text-align: center;">Player 2</td> </tr> <tr> <td colspan="2"></td> <td style="text-align: center;">I</td> <td style="text-align: center;">II</td> <td style="text-align: center;">III</td> </tr> <tr> <td rowspan="3" style="text-align: center;">Player 1</td> <td style="text-align: center;">I</td> <td style="text-align: center;">1</td> <td style="text-align: center;">3</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">II</td> <td style="text-align: center;">0</td> <td style="text-align: center;">-4</td> <td style="text-align: center;">-3</td> </tr> <tr> <td style="text-align: center;">III</td> <td style="text-align: center;">1</td> <td style="text-align: center;">5</td> <td style="text-align: center;">-1</td> </tr> </table>				Player 2					I	II	III	Player 1	I	1	3	1	II	0	-4	-3	III	1	5	-1	CO2	Ap
			Player 2																								
		I	II	III																							
Player 1	I	1	3	1																							
	II	0	-4	-3																							
	III	1	5	-1																							
c)	Differentiate Artificial Intelligence vs Machine learning	CO3	U																								
Q 2	Solve any <b>two</b> questions out of three: (05 marks each)	10																									
a)	Explain Mixed Strategy Equilibrium with an example.		CO2	U																							
b)	What are the advantages and disadvantages of hill climbing algorithm?		CO3	U																							
c)	Describe Prisoner's Dilemma with its game table.	CO2	U																								
Q.3	Solve any <b>two</b> questions out of three. (10 marks each)	20																									
a)	i) Describe the Need of probabilistic reasoning in AI. ii) Explain the Bayesian Networks in detail.		CO4	U																							
b)	i) Describe techniques for model selection in Machine Learning. [05M] ii) Explain the Vapnik-Chervonenkis (VC) dimension with its importance		CO5	U																							

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	[05M]																
b)	Find the most cost-effective path to reach from start state A to final state Z using A* Algorithm.  	CO3	AP														
Q.4	Solve any <b>two</b> questions out of three. (10 marks each)	20															
a)	i) Differentiate between propositional logic and first order predicate logic with suitable examples. [05M] ii) Explain the Causes of uncertainty? [05M]	CO4	U														
b)	Trace the results of using Apriori algorithm on the grocery store example with support threshold $s=33.34\%$ and confidence threshold $c=60\%$ . Show the candidate and frequent item sets for each database scan. Enumerate all the final item sets. Also indicate the association rules that are generated and highlight the strong ones, sort them by confidence.  <table border="1" data-bbox="247 1388 973 1780"> <thead> <tr> <th>Transaction ID</th> <th>Items</th> </tr> </thead> <tbody> <tr> <td>T1</td> <td>HotDogs, Buns, Ketchup</td> </tr> <tr> <td>T2</td> <td>HotDogs, Buns</td> </tr> <tr> <td>T3</td> <td>HotDogs, Coke, Chips</td> </tr> <tr> <td>T4</td> <td>Chips, Coke</td> </tr> <tr> <td>T5</td> <td>Chips, Ketchup</td> </tr> <tr> <td>T6</td> <td>HotDogs, Coke, Chips</td> </tr> </tbody> </table>	Transaction ID	Items	T1	HotDogs, Buns, Ketchup	T2	HotDogs, Buns	T3	HotDogs, Coke, Chips	T4	Chips, Coke	T5	Chips, Ketchup	T6	HotDogs, Coke, Chips	CO6	Ap
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c)	i) Explain types of Kernels used by SVM. [05M] ii) Explain the Examples of Machine Learning Applications. [05M]	CO5	U														

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