

Honour

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

May-June 2024-25	
(B. Tech) Program: Computer Engineering, IT and EXTC Scheme: I	
Regular Examination: TY Semester: VI	
Course Code: HAIMLC601	And Course Name: Game Theory using AIML
Date of Exam: 31-05-2025	Duration: 02.5 Hours
Max. Marks: 60	

Instructions:

(1)All questions are compulsory.

(2)Draw neat diagrams wherever applicable.

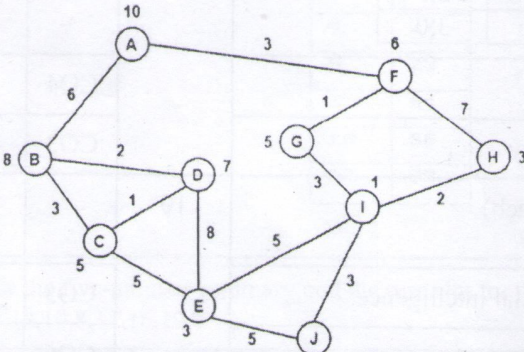
(3)Assume suitable data, if necessary.

(4) Scientific Calculator is not allowed.

Q. No.	Question	Max. Marks	CO	BT level																					
Q 1	Solve any two questions out of three: (05 marks each)	10																							
a)	Find The Nash Equilibrium of the following Game the Payoff matrix as follow <div><table><tr><td></td><td></td><td colspan="3">Player 2</td></tr><tr><td rowspan="4">Player 1</td><td></td><td>L</td><td>C</td><td>R</td></tr><tr><td>T</td><td>2,0</td><td>1,1</td><td>4,2</td></tr><tr><td>M</td><td>3,4</td><td>1,2</td><td>2,3</td></tr><tr><td>B</td><td>1,3</td><td>0,2</td><td>3,0</td></tr></table></div>			Player 2			Player 1		L	C	R	T	2,0	1,1	4,2	M	3,4	1,2	2,3	B	1,3	0,2	3,0	CO1	Ap
		Player 2																							
Player 1		L	C	R																					
	T	2,0	1,1	4,2																					
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	B	1,3	0,2	3,0																					
b)	Explain the Bayesian Networks in detail.		CO4	U																					
c)	Describe are the drawbacks of Hill climbing policy		CO3	U																					
Q 2	Solve any two questions out of three: (05 marks each)	10																							
a)	Differentiate between machine learning and artificial intelligence.		CO3	U																					
b)	Explain Association Rules using Market Basket Analysis.		CO6	<u>U</u>																					
c)	Differentiate between propositional logic and first order predicate logic with suitable examples.		CO4	U																					
Q.3	Solve any two questions out of three. (10 marks each)	20																							
a)	i) Explain the characteristics of Game Theory? [05M] ii) Find the optimal strategy if any, considering (Two person, zero sum) game which represent payoff matrix [05M]		CO2	U Ap																					

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	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td colspan="2"></td><th colspan="3">Player 2</th></tr> <tr> <td colspan="2"></td><th>I</th><th>II</th><th>III</th></tr> <tr> <th rowspan="3">Player 1</th><th>I</th><td>-3</td><td>-2</td><td>6</td></tr> <tr> <th>II</th><td>2</td><td>0</td><td>2</td></tr> <tr> <th>III</th><td>5</td><td>-2</td><td>-4</td></tr> </table>			Player 2					I	II	III	Player 1	I	-3	-2	6	II	2	0	2	III	5	-2	-4			
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		I	II	III																							
Player 1	I	-3	-2	6																							
	II	2	0	2																							
	III	5	-2	-4																							
b)	i) What is Game Theory? What are the properties of a Game? [05M] ii) Define the following terms: [05M] (a) Pay off Matrix (b) Saddle point (c) Zero-sum game (d) Strategies of a Game (e) Two Persons zero sum game		CO2	U																							
c)	Find the most cost-effective path to reach from start state A to final state J using A* Algorithm, considering the following graph the numbers written on edges represent the distance between nodes and the numbers written on nodes represent the heuristic value. <div style="text-align: center;">  </div>		CO3	Ap																							
Q.4	Solve any two questions out of three. (10 marks each)	20																									
a)	Explain Association Rules using Market Basket Analysis.		CO4	U																							
b)	Explain the functions of Support Vector Machine and Kernel.		CO5	U																							
c)	i) Explain supervised and unsupervised learning with the real life Examples in detail. [05M] ii) Describe techniques for model selection in Machine Learning. [05M]		CO5	U																							
