Roll No: | | | | | | | | | | | |

PRESIDENCY UNIVERSITY

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

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Bengaluru

Mid Term Examinations - October 2026

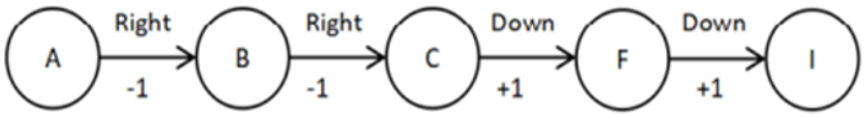
Date: 07/10/2026 **Time:** 09:30 AM - 11:00 AM

Course Code: CSE3503 **Course Name:** Reinforcement Learning for AI Systems

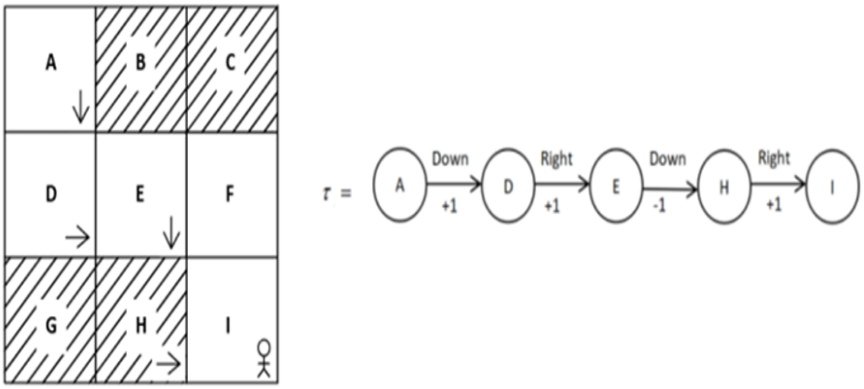
Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	18	72

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Define the following a) Policy b) Discount factor	2	CO1	BT1
2	Differentiate between Supervised Learning and Unsupervised Learning	2	CO1	BT2
3	Calculate the return for the following Episode 	2	CO1	BT2
4	Distinguish between the Markov property and Markov chain	2	CO2	BT2
5	Define a. Correlation b. Covariance	2	CO1	BT1

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	For the following grid world Environment Calculate the Value function which follows a deterministic policy. 	10	CO2	BT3
7	Illustrate Bellman Equation for the Value function in deterministic environment with an example	10	CO2	BT3

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT

PTO (Please Turn Over)

8	Illustrate the following for both deterministic and stochastic environment a. Value function b. Q function	10	CO2	BT3
9	X is a random variable with the outcomes of throwing a dice. Find the expectation E[f(x)] where f(x)=X3 Table 1.2: Probabilities of throwing a dice	10	CO2	BT3

X	1	2	3	4	5	6
P(x)	1/6	1/6	1/6	1/6	1/6	1/6

PART D: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
10	Discuss Markov Decision Process in detail	10	CO2	BT2
11	Explain the following a. Action Space b. State space c.Episodic task & Continuous task d. Discount Factor e. Q function	10	CO2	BT2

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	Discuss the types of RL Environments	10	CO1	BT2
13	Discuss Deterministic and Stochastic policy in RL with an example for each.	10	CO2	BT2