National University

of Computer & Emerging Sciences Peshawar Campus

Student Name: _____ Roll No: _____

Program: CS-18 A&B
Semester: SPRING – 2021
Time Allowed: 20:00 minutes
Course: Artificial Intelligence (CS 401 & 461)

Examination: MOCK
Total Marks: **60** Weightage: **30**
Date: 20/05/2021
Instructor: Dr. Hafeez ur Rehman

NOTE: Attempt all questions. Distribute your time according to question's overall weightage.

Time Allowed: 15 minutes

Submissions after 15 minutes will not be accepted.

Question # 01: [**Marks: 5 +10**]

1. What will be the size of the state space for a vacuum cleaner agent, if there are 100 possible locations along with the following actions i.e., move left, move right, move up, move down, move diagonal?

The size of the vacuum cleaner agent with n locations (irrespective of actions) will be: $n \times 2^n$.
Thus, for 100 locations the size of the state space will be: 100×2^{100}. For details, see page 70 of the book.

2. Characterize the following agents into their respective task environments:

Agents / Environment Types	Deterministic vs Stochastic	Fully vs Partially Observable	Episodic vs Sequential
Automated Taxi	Stochastic	Partially Observable	Sequential
Chess with a clock	Deterministic	Fully Observable	Sequential
Backgammon	Stochastic	Fully Observable	Sequential
Poker	Stochastic	Partially Observable	Sequential
Part-picking robot	Stochastic	Partially Observable	Episodic
Image Analysis	Deterministic	Partially Observable	Episodic
Agent Playing Cricket	Stochastic	Partially Observable	Sequential

For details about task environments, see page 41 to 46 of the book.