COMSATS - Lancaster Dual Degree Programme
COMSATS Institute of Information Technology Lahore

Lancaster University

☐ **Sessional-I** ☐ **Sessional-II** √**Terminal Examination – SPRING 2018**

Course Title:	Artificial Intelligence			Course Code:	CSC475	Credit Hours:	3(2,1)
Course Instructor/s:	Dr. Wajahat Mahmood Qazi			Programme Name:	BS Computer Science		
Semester:	7th	Batch:	Section:	A, B & C	Date:		
Time Allowed:	**180 Minutes**			**Maximum Marks:**		**60**	
Student's Name:				Reg. No.			

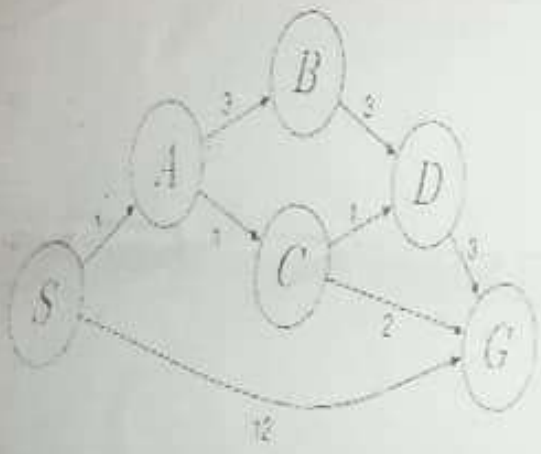
Important Instructions / Guidelines:

- Start with prayer
- Attempt your own exam
- Write in legible handwriting
- Write appropriate answers

Question 1:

Marks: 2+2+2+2+2= 10

Dry run DFS, BFS, Uniformed cost search and A* on the following graph and compute the path using h(n) given in the table. Under what condition A* is optimal



State	h(n)
S	5
A	3
B	6
C	2
D	3
G	0

Question 2:

Marks: 5

a. Under what conditions genetic algorithm should be applied on a given problem.

b. Consider the problem of finding the shortest path using the graph given in question 1, such that each node is visited only once. How many genes will be used in a chromosome of each individuals? How many genes will be needed to encode all pairs. Also state the formula to compute these pairs.

Question 3:

Marks: 10

You have been asked to train a robot to expect a reward when either a red or blue colour balls are shown to it. When both balls red and blue are shown at the same time, it does not expect to get a reward. You are required to provide a complete neural network-based solution along with the learning algorithm, encoding scheme and dataset required to train the robot.