Artificial Intelligence – Assignment 2 (Theory)

Name: Roll Number:

*Answer the following questions and submit it as a pdf file, in moodle . This assignment should be submitted by 10th August, 2015.*

Q1:

Weighted A\* can be described as best-first search with:  
f(n) = g(n) + w · h(n) or as f(n) = (1-w) · g(n) + w · h(n)  
Using one of these formulations, provide a bound on the maximum sub-optimality of a path that weighted A\* can return as a function of w.

Let us consider an extension of A\* called A\*w which adds a second queue FOCAL maintaining a subset of the states on OPEN. This subset is the set of those states whose cost does not deviate from the minimal cost of a state on OPEN by a dactor greater than (1+w). More precisely,

FOCAL = {q | f(q) <= (1+w) . minr e Open

Q2:

Formulate the Rubik’s cube problem as a state space search problem.

1. Define a state representation.
2. Give the initial and goal states in this representation.
3. Define the successor function in this representation.
4. Give one admissible heuristics for this problem.