Advances in Robotics and Control – 2020s
Assignment 4

Submission date: 28/04/2020, Total Marks: 25

1) Write a code to plot basis functions of B-spline, given the degree p and knot vector U. [10]
2) For a robot agent of circular shape (diameter = 1 unit) a straight path is designed with spline with two control points (top left, bottom right) in a map considering no obstacles. But, when the agent started moving from the initial point (0,0) and reached at (4,2) it is found that there are two obstacles (circular and polygonal shape) as shown in the Figure. Use the property of local modification of Spline (by using knot insertion, control point modification etc.) for modifying the path with minimal deviation from the straight line path. The path need to be at least C^1 continuous at any point [15]