BRAC UNIVERSITY
Inspiring Excellence

Course : CSE461 (Introduction to Robotics)

Quiz-2 (Section-04)

Time: 30 minutes Marks: 15

[CO2] RoboExpedition has a fun challenge for robots in two different places:

Part 1 - Forest Adventure:
Robots start at the edge of a dense forest. They need to go through the trees and bushes to find a special spot shown on a map. It's like a forest maze with lots of things in the way. The robots use their sensors and other special tools to find a safe way through. At the beginning, they also have a GPS that helps them know where they are in the forest. And you don't have the map of the forest.

Part 2 - Remote Journey:
After leaving the forest, robots enter a remote area. In this place, the GPS that helps them know where they are doesn't work very well. Robots have to rely on other things, like how their wheels move and what motion they are maintaining, to figure out where they are. They need to travel safely through the challenging area.

1. What Path planning algorithm should you use for Part 1 and why ? **[4 Marks]**
2. As the robot does not know the map and it has a sensor to detect the object then what mapping algorithm should it use to create a map and how? **[1+ 4= 5 Marks]**
3. Which localization technique should be used for Part 2 and how ? **[1+2 Marks]**
4. What localization technique can be used when no known landmarks are present in the environment ? Explain and state some limitations of this technique. **[3 Marks]**

NB: You have additional 5 minutes to scan and submit your answer scripts