Q)A—Above dimension 2 the difference in residual variance is very less.it is almost constant after dimension 2. So it is best at dimension 2.

Q)C  yes, the map is able to capture the topology of robot motion space .  because on going along the circle theta 1 is varying .but theta is constant for particular circle.

Same as we move radial out theta 2 is varying but theta 1 is constant . so this capture the topology of torous.

Q)G—in first obstacle the red arm is striking on certain angle .so after removing the images which are overlapping with obstacle ,we have certain gap in 2d map which correspond  that we cannot rotate red arm furher in this direction.

In second obstacle there are not much images overlapping with obstacles. Because red arm is not striking with obstacle .it is free to move for all theta 1. Which was not in obstacle 1.