Q.1. For the free workspace shown in following figure, do the following:
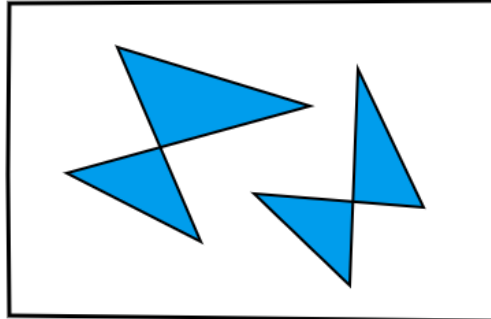
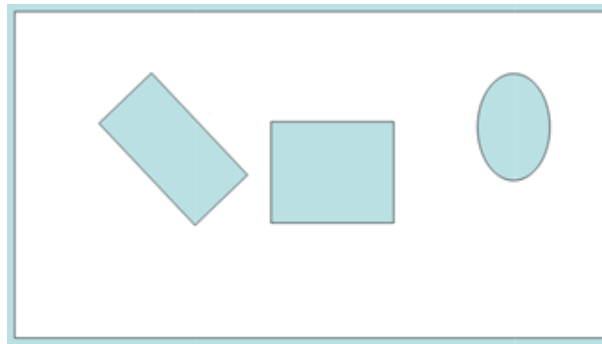 (a) Sketch the free workspace and trapezoidate it (using the sweeping trapezoidation algorithm).
  (b) Sketch the dual graph for the trapezoidal partition and the roadmap (i.e., the dual graph with centers and with connecting polygonal paths through midpoints). **[05 M]**

Q.2. Draw Generalized Voronoi Diagram for the configuration space shown in the figure below:

[2.5 M]

Q.3. Draw the path using the BUG2 algorithm (left turning robot) in the world shown below:

[2.5 M]

Q.4. Explain the working of odometery motion model. **[05 M]**

Q.5. A taxi hits a person and runs away in Delhi at around 11:00 PM. You are the primary witness of this hit-and-run incident. Let us assume that there are only blue and green colour taxis in Delhi. In the court you swear under oath that the taxi involved in the incident was blue. Thorough empirical testing shows that, under the low lighting conditions, discrimination between blue and green is only 75% reliable.
  (a) Considering your testimony and given that 9 out of 10 taxis are green, what is the probability of the taxi being blue?
  (b) If 7 out of 10 taxis are green do you find any significant difference? **[10 M]**

***** BEST OF LUCK *****