Robotics Programming Practice Mid-term

Put your answers in the Word document and turn it in as **YourNamePracticeMidTerm**

Short answer:

Describe how the following sensors work and their uses

1. Light Sensor
2. Shaft encoder
3. Sonar sensor
4. Touch Sensor

Describe the following. What is its use?

1. motor[]
2. SensorValue()
3. while()
4. if
5. &&
6. II
7. Condition
8. Function
9. //
10. {}
11. /\* \*/
12. joystick.joy1\_y1
13. joy1Btn(6)
14. abs()
15. pow()
16. clearTimer(T1)
17. time1[T1]
18. int x;
19. Functions

Describe what the following code does.

/\* 24 \*/

task main()

{

 SensorValue[rightEncoder] = 0;

 SensorValue[leftEncoder] = 0;

 while(SensorValue[sonarSensor] >= 25)

 {

 if(SensorValue[leftEncoder] <= SensorValue[rightEncoder])

 {

 motor[rightMotor] = 63;

 motor[leftMotor] = 50;

 }

 if(SensorValue[rightEncoder] >= SensorValue[leftEncoder])

 {

 motor[rightMotor] = 50;

 motor[leftMotor] = 63;

 }

 if(SensorValue[leftEncoder] == SensorValue[rightEncoder])

 {

 motor[rightMotor] = 63;

 motor[leftMotor] = 63;

 }

 }

}

/\*25 \*/ Describe what the following code does

task main()

{

 int threshold;

 threshold = 1491;

 SensorValue[rightEncoder] = 0;

 SensorValue[leftEncoder] = 0;

 while(SensorValue[leftEncoder] < 720)

 {

 if(SensorValue(lineTrackerLeft) >= threshold)

 {

 motor[leftMotor] = 0;

 motor[rightMotor] = 40;

 }

 //If the center sensor sees dark...

 if(SensorValue(lineTrackerCenter) >= threshold)

 {

 motor[leftMotor] = 40;

 motor[rightMotor] = 40;

 }

 if(SensorValue(lineTrackerRight) >= threshold)

 {

 motor[leftMotor] = 40;

 motor[rightMotor] = 0;

 }

 }

}

Robotics Programming Practice Mid-Term Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

26) Write a program to complete the following using the Grand Challenge Virtual World (Utility-> Grand Challenge)

Tasks:

1. Start robot at point ‘B’
2. Robot drives to point ‘A’ using encoders to determine when to stop
3. Robot drives to point ’C’ using the range finder to determine when it is close enough to the wall to stop.
4. Robot uses line following to drive to and stop at the Red Dot with ‘HCI’

Programming 1 pt each

 \_\_\_ Program Compiles

 \_\_\_ Header with name, description and date

 \_\_\_ Properly uses encoder

 \_\_\_ Properly uses Ultrasonic range finder

 \_\_\_ Properly uses line tracking

Performance

 \_\_\_ B-A with encoder (2 with, 1 without)

 \_\_\_ A-C with UltraSONIC Range Finder (2 with, 1 without)

 \_\_\_ C – D with line tracking (2 with, 1 without)