NAME_____ SECTION_____

Take Home Final Exam

Instructions:

Please read the following, for if you don't its no one's fault but yours for the zero you will receive. The take home final exam shall be printed out and your answers shall be hand written. You are only allowed to use any information on your **EGR101 canvas page** and any class notes you and only you have taken. You are **not** allowed to work with anyone else.

- ***THE EXAM IS DUE NO LATER THAN 5:00PM ON DECMEMBER 6TH 2017***
- ***EITHER TURNED IN DURING CLASS OR TO MY OFFICE***
- ***YOU MUST BE THE ONE TO TURN IN YOUR EXAM***

Place your name and section number (E2 ro E3) at the top of each sheet. Write clearly, if your answers are unreadable you will receive no points for the respected question(s). When finished staple all sheets together with this page as the cover and hand in to your instructor.

If you have read this and understand what to do, print and sign your name below. By signing you are stating that you take full responsibility for your exam, meaning that if any evidence of cheating is found within your exam you are subject to a zero for the exam and academic review.

PRINT NAME_____

SIGN NAME_____

DATE_____

NAME_____ SECTION_____

Question	Points	Possible points
1		5
2		5
3		5
4		5
5		10
6		10
7		5
8		5
9		5
10		5
11		20
12		20
13		20
14		20
15		20
16		20
17		10
18		10
19		10
20		10
21		10
22		25
23		10
24		20
25		5
26		10
27		20
28		20
29		50
30		50
31		10
32		30
Section #		20
Total		500

NAME_____ SECTION_____

1. When and where are the EGR 101 class section meetings held? When and where are the weekly EGR 101 assemblies held?

2. Your grade drops one letter grade when you miss how many class meetings?

3. Who is your class instructor and peer mentors?

4. When and where does your instructor hold office hours?

5. Who is your program advisor?

6. In the list below what are they and what can they be used for?

- Ultrasonic sensor

- RGB sensor

- IR sensor

- Wheel Encoder

- Servo

NAME_____ SECTION_____

7. What is the unit of measure for Voltage?

8. What is the unit of measure for Current?

9. What is the unit of measure for Resistance?

10. What is the unit of measure for Power?

11. Given the following, calculate the resistor needed so the LED doesn't die. (Show all work):

    V_{drop} = 2v Imax = 20mA V_{source} = 9v

12. Show an example of declaring a variable for Arduino script.

13. What are the two standard functions for an Arduino script?

14. Show an example of an IF/ELSE statement for an Arduino script.

15. Show an example of a FOR LOOP for an Arduino script.

NAME_____ SECTION_____

16. Show an example of a WHILE LOOP for an Arduino script.

17. State the characteristics common to Embedded Systems.

18. List three examples of an Embedded System.

19. Given the following System description, circle TRUE or FALSE if the description is for an embedded system.
System Description: A system composed of a set of Unmanned Aerial Vehicles (UAV) that are equipped with a high-performance sensors that are capable of flying autonomously into inclement weather conditions (thunderstorms, hurricanes, etc.) and collecting data along the path. Their path is simply a vertical takeoff and landing after reaching a desired altitude. The essential conditions that the UAV seeks to derive from the storms are temperature, humidity, barometric pressure, and wind speed and direction. Along with an external sensor payload, each UAV should record and broadcast its system status. With these values, the UAV's goal is to transmit this information back to a mobile ground control station that will be able to determine the strength of the storm as well as predict its future paths or behaviors. This ground station would be needed for deployment, data collection, and recovery of each UAV. A more advanced model would be extremely beneficial during hurricane season to predict storm path.

NAME_____ SECTION_____

20. What are the phases of the system development process? Hint: there are more than 5 steps in the engineering process.

21. What is a common point of failure within a team?

22. What are the three roles within our EGR101 teams and what are they responsible for (roles within a meeting)? Who is responsible for design?

23. What is one document that is formed during testing phase?

24. What are some documents that are common within different phases of the engineering process? (State at least two and the phase they fall under)

25. What are the key components for a Resume?

NAME_____ SECTION_____

26. What development phase does your team demo fall under? Justify your answer.

27. Develop a test plan for a component of your team's stage 4 solution. (Attach the test plan to the end of this exam. Along with what requirement you are testing against. If it's a requirement your team came up with please state it.)

28. What is a requirement? What denotes a requirement? Give an example.

29. List your team members (full name) and their roles (responsibilities) for stage 4?

30. If the stage 1 and 2 courses had their colors inverted, how would that affect your solution for those stages? Answer in detail.

31. Compose and send me a professional email that states attributes of a well-formed email. Also print it out and attach it to this exam.

NAME_____ SECTION_____

32. What is IOT? Give an example of use. What is something that must be thought of when developing a IOT system?