UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 1 Examination in Engineering: August 2014

Module Number: IS 1302 **Module Name: Communication for Engineers**

[Three hours]

[Answer all questions]

Question 01

Correct All the Errors in the Following Sentences and Rewrite Them.

1. my friend, ms.sullivan is mexican.
2. we are leaving the south and heading north this Summer.
3. mens shirt are extremely expensive during the festival season.
4. Jack and Jane house was built in 1980's.
5. "Hey whats that?" he shouted.
6. My doctor Mr. jayasekara lives in the next street.
7. Our neighbor's car is an old Volkswagen and its just about to fall apart.
8. Remember the basic rule capitalize the first word of a sentence.
9. Most people have pompous attitudes however, Some do not.
10. I gave my friend a necklace a bangle, some cosmetics for her birthday.

(10 Marks)

Question 02

Read the Following Story and Answer the Questions. (15 Marks)

"What are these photos you brought?" The interviewer asked during my senior year at the university. I was applying for my first engineering job and I brought pictures of the devices I had made for my dad's cabinet shop. I think those photos convinced the interviewer that I had good practical hands-on engineering experience. I got the job. We packed up our little household and moved to California, or should I say 'returned to California,' the place of my birth.

My assignment? Design and test supporting structures for satellite payloads. Requirements? High strength to weight ratios with high reliability. I learned about space environments, material properties, computer aided design systems, and how aerospace companies work.

After a couple of years I became a test engineer, then system safety analyst, then electronics packaging designer, then...

Each assignment gave me experience in new areas of engineering. I tried diligently to learn company goals and objectives and participate in process improvement initiatives. This focus brought trust and new opportunities to serve and grow. But I wasn't finished with school yet. I wanted a master's degree and I wanted to continue my education; I loved to learn. I applied for graduate school, was accepted and returned to the university. I was in tears as I left the math building one warm June day. Summer on college campus was relatively quiet, but my mind was clamoring with the noise of theorems and derivations, and proofs drumming away at my confidence. "What have I gotten myself into?" I thought. I had left a good paying job and returned to college after nine years to pursue a Master of Science degree in Mechanical Engineering. The very first class I had was Linear Algebra. It was a lot of work relearning matrices and vectors, moving in to linear transformations and determinants. There were times when I didn't know if I could do it, but I kept at it and looked for ways each day to apply my new knowledge so that it would be interesting and meaningful. How meaningful could Linear Algebra be?

In graduate school I took Linear Algebra, finite element method, CAD software development, and utilized these tools in my thesis to research numerical to physical surface shape manipulation. I wanted to morph surfaces; surfaces that could be used as forms to shape other objects. I applied for funding and built numerically controlled surfaces. (While the academics were fresh in mind, I took the professional engineering exam and received my license to make sure doors of opportunity were always open.

Following graduate school, I worked in industrial automation designing new methods to handle printed circuit boards during production. I also worked as an Engineering Manager during those years. I think the Master of Science degree was an advantage in my career. Eventually I returned to the aerospace world with modeling and simulation work on

guidance, navigation, and control instruments. Along the way I developed my writing skills, a plus that opened more and more opportunities.

I have also looked for opportunities to serve as a mentor to other young engineers; another investment with definite returns. Although not my motive, I was always improved, when I sought to improve and help others. Such has been my satisfying journey to and through engineering. What will your journey be like?

a) State whether these statements are **True (T), Falls (F) or Not Given (N)** and explain reasons for your claim.

1. The writer liked to go back to California.

2. The writer had a passion to learn.

3. He was a mechanical engineer.

4. The writer was satisfied with his carrier.

5. He was a very ambitious man.

(05 marks)

b) Make sentences using the following words in order to bring out their meanings.

Example: Motive – Her motive was revenge.

1. Hands-on
2. Diligently
3. Relatively
4. Manipulate
5. Eventually

(05 Marks)

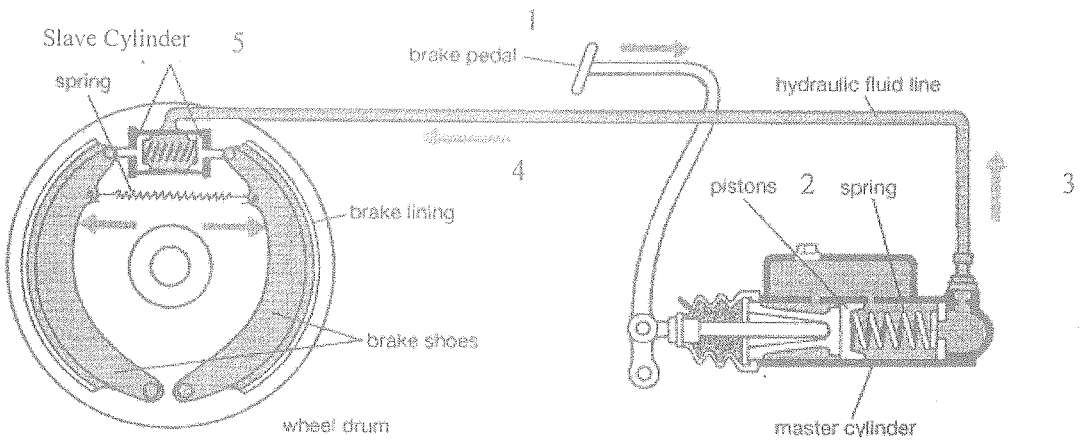
c) Explain how your engineering carrier would be like in the future. (Use 60 – 75 words)

(05 marks)

Question 3

Study the Following Process of a Car Braking System and Describe it Using Five or More Steps. (10 Marks)

Hydraulic Brakes



Question 04

Correct Grammar and Spelling Mistakes (if there is any) in the Following Sentences and Rewrite Them.

Example: The work have to be done in Monday.

The work has to be done by Monday.

1. Lydia sed, "Kitty look, theres Mr. Peter!"
2. Once the bus arrive we will be on are way.
3. Chocolate in USA is the most cheapest chocolate in the world.
4. Boeing 119 was the first airbus to land on the Sahara.
5. The cashere gave me two hundred and sixteen dollars sixty two cents.
6. How can we combin economic growth and respect for an environment?
7. Car exhausts emissions are having major effect on a world's climate.
8. She has worked in a fashion industry since she leave school.
9. The impact of telephone of how we communicate have been enormous.
10. The country has a rapid expand population.

(10 Marks)

Question 07

a) List at least four common mistakes made by your classmates during presentations and suggest ways of correcting those mistakes. (10 Marks)

b) You are a civil engineer who is responsible in constructing a new seven storied building for a supermarket facing a main road. The land suggested for this purpose has an elderly home and it is rather a congested area. One human rights association opposes the idea of removing the elderly home from its current location. As a civil engineer and a critical thinker discuss how you can convince the public on positive and negative aspects of this issue in order to carry out this construction.

(15 Marks)

Question 05

Read the Following Passage and Write a Summary of It in 80 Words.

In "Robotics" (Radio Electronics, August 1986), Mark J. Robillard states, "Most robots must move around to accomplish their tasks". The information that is needed to accomplish these tasks is gathered through an assortment of sensors – touch sensors, sound sensors and light sensors. Depending on what type of tactile information is obtained through these sensors, objectives of the robot can be met. A robot's gripper could crush an object or not exert enough force to hold force needed. Micro switches are used in the form of touch sensors. They are the simplest form of sensors used for this purpose. To eliminate weight and space used for switches, LED/ phototransistor pairs can be used. "If you've ever been bowling, that setup should look familiar". The phototransistor is then interfaced to a computer or other type of controller. The pairs of sensors provide more than just a there/not there signal. "The amount of light that is reflected provides an indication of how close the object is". This approach is patented by "Heath's Hero 2000" and uses optical encoder disks. Integrated circuits that use "strain gauges and pressure sensitive pain" are yet another way to detect the amount of force applied to an object.

All of these different methods of allowing a robot to interface with the real world "comprise a field of inquiry that is as large as robotics itself".

(15 Marks)

Question 06

Write Short Descriptions on Any Three of the Following Topics. (80 - 100 words each)

1. Communication and Engineers.
2. Importance of Critical Thinking for Engineers
3. Stress Management
4. Improving Means of Active Listening Skills
5. Impromptu Speeches

(15 Marks)