**CSCE-313 Quiz1 SP’17 (20 points)**

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**Question 1 (5 points, 0.5 points each): Circle TRUE (T) or FALSE (F) for the following statements:**

• **T**  F Multi-programming allows programs to run concurrently on a single core, single thread CPU.

• **T** F In Batch systems, DMA allows the OS to load next job while current one runs.

• T **F** Among the many ways an OS can play the role of a referee, protection is not one of them.

• T **F** An OS can be considered as a set of utilities.

• **T** F Mean Time to Failure is one of the measures of Availability that an OS must monitor.

• **T** F Throughput is a performance metric that tells us the # of operations done in a unit of time.

• **T** F Hard Reset is an example of asynchronous exception.

• **T** F A trap is synchronous and intentional.

• T **F** An illegal memory reference is an example of a trap.

• **T**  F A branch instruction in a user application program could potentially result in a fault.

**Question 2 (5 points, 1 points each): Which of the following actions must require the assistance (or intervention) of the OS Kernel? (Circle correct answer)**

(a) Read characters typed on the Keyboard **YES** NO

(b) Exception Handling **YES** NO

(c) An add operation that does not result in exceptions YES **NO**

(d) Creation of a new file **YES** NO

(e) Display text on screen **YES** NO

**Question 3 (2.5 points): What is an example of an operating system as:**

Referee: Allocating resources for multiple processes. Multitasking -> multiple processes on one computer.

Illusionist: Makes something messy look clean and professional on the front-end. Microsoft Powerpoint, for example.

Glue: Holds all the pieces of a computer together. Makes everything functional.

**Question 4 (2.5 points): For a “Hello world” program, the kernel must copy the string from the user program memory into the screen memory. Why must the screen’s buffer memory be protected?**

Code might be buggy or malicious.

**Question 5 (5 points): Suppose you have to implement an operating system on hardware that supports synchronous exceptions but does not have interrupts. Can you devise a satisfactory substitute for interrupts using synchronous exceptions? If so, explain how. If not, explain why.**

It would not be possible, since interrupts are asynchronous where they intercept a process from outside the processor. Polling could not work because it is the same case for all devices if they do not have interrupts.