PART A

Microsoft Windows :

The user interface of MS Windows is Graphics User Interface (GUI) with CLI shell, so it is a friendly desktop metaphor interface and the user usually uses mouse, keyboard to control computer. Icons represent files, programs, actions, and so on.

Various mouse buttons over objects in the interface cause various actions.

The most important subsystem is Win32. Win32 API represents the native environment for MS Windows product.

MS Windows uses Microkernel System Structure. Moves as much from the kernel into user space. Communication takes place between user modules using message passing. The advantage of Microkernel are easier to extend, easier to port the operating system to new architectures, more reliable, and more secure.

Unix :

The user interface of Unix is Command-Line (CLI). When user wants to input any command, all he can do is typing command. Sometimes the Unix implements in kernel, and sometimes by systems program. Sometimes multiple flavors implement by using shells. Primarily fetches a command from user and executes it. Sometimes commands built-in, sometimes just names of programs.

The Application Program Interface (API) of Unix is POSIX API.

The structure of Unix is Layered Operating System. Consists of everything below the system (call interface and above the physical hardware.) Provides the file system, CPU scheduling, memory management, and other operating-system functions. A large number of functions for one level

Because the advantage of Unix are the advantage of Multi-User, Multi-Programing and Multi-Tasking, many severs’ OS are Unix.

Part B

Android is a mobile operating system developed by Google. Android's kernel is based on one of the Linux kernel's long-term support (LTS) branches. On top of the Linux kernel, there are the middleware, libraries and APIs written in C, and application software running on an application framework which includes Java-compatible libraries. Development of the Linux kernel continues independently of other Android's source code bases.

Android allows for live widgets, application shortcuts on the home screen, application generated notifications and vibrational feedback as a response to user input called haptic feedback.

Games on android devices are able to utilize the gyroscope to mimic for example the steering of a racecar.

Part C

Real time system :

A real-time operating system (RTOS) is an operating system that guarantees a certain capability within a specified time constraint. There are two kinds ROTS, the first is hard and the other one is soft. In what is usually called "hard”, the calculation could not be performed for making the object available at the designated time, the operating system would terminate with a failure. In the “soft” , the assembly line would continue to function but the production output might be lower as objects failed to appear at their designated time, causing the robot to be temporarily unproductive.

The most common designs are:

Event-driven – switches tasks only when an event of higher priority needs servicing; called preemptive priority, or priority scheduling.

Time-sharing – switches tasks on a regular clocked interrupt, and on events; called round robin.

In typical designs,[citation needed] a task has three states:

1. Running (executing on the CPU);
2. Ready (ready to be executed);
3. Blocked (waiting for an event, I/O for example).

For example : WinCE

Embedded system :

An embedded system is a computer system with a dedicated function within a larger mechanical or electrical system, often with real-time computing constraints. Embedded systems are designed to do some specific task, rather than be a general-purpose computer for multiple tasks. Some also have real-time performance constraints that must be met, for reasons such as safety and usability. For example : mobile phones.

Embedded systems are not always standalone devices. Many embedded systems consist of small parts within a larger device that serves a more general purpose.

Maybe. The Real time system is the base for the embedded system. The embedded system is develop by the Real time system, Graphic User Interface, and so on.

TSR processes :

A terminate and stay resident (TSR) is set up to be loaded and then remain in computer memory so that it is quickly accessible when a user presses a certain keyboard combination.

For example : calendar, clock

Part D

Typing “man trap” in a UNIX machine shows all the commands that you can use and a brief descriptions on the commands.

Part E

No. JMV has lots of implementations in all kinds of OS, but it is a program that uses OS; therefore the computer must have one OS to run the JVM on it.

Internet source :

<https://en.wikipedia.org/wiki/Unix>

https://en.wikipedia.org/wiki/Microsoft\_Windows

<https://en.wikipedia.org/wiki/Real-time_operating_system>

https://en.wikipedia.org/wiki/Real-time\_computing

<https://en.wikipedia.org/wiki/Android_(operating_system)>

<https://en.wikipedia.org/wiki/Embedded_system>

https://en.wikipedia.org/wiki/Terminate\_and\_stay\_resident\_program

https://en.wikipedia.org/wiki/Java\_virtual\_machine