1. Answer:

a) Applications software helps users personally to accomplish some specific tasks, usually not system-related ones. Examples include

- Business: word processing, spreadsheet, presentation, database systems …
- Graphics and multi-media: photo editing, video and audio editing…
- Communication: web browsing, email clients, instant messaging …
- Personal/Entertainment: personal finance, music playing, computer games…

b) OS is operating system which interfaces between a user's program and the hardware and provides a variety of services and supervisory functions such as handling of input and output operations and allocation of storage and memory. Current popular OS include

- Desktop, laptop: Windows, macOS
- Supercomputer: Linux
- Server: Linux (Ubuntu, Debian, CentOS), Windows
- Smartphone, tablet: Android, iOS

(https://en.wikipedia.org/wiki/Usage_share_of_operating_systems)

c)

- The term *platform* often refers to the combination of the type of hardware and the type of operating system running on it.
- A *hardware platform* can refer to a computer's architecture or processor architecture.
- A *software platform* can either be an operating system or programming environment, though more commonly it is a combination of both.
- Any operating system is hardware dependent, from interrupt handling, process scheduling to memory management, device I/O.
- Application software is built on top of OS and dependent on the OS to interact with the hardware (such as keyboard input and printer output). Hence, most application software is platform dependent.
- However, developing cross-platform software is also feasible, but it can be a very time-consuming task. Read more about cross-platform programming/development at: http://en.wikipedia.org/wiki/Cross-platform

2. Answer:

- The user interfaces for users to interact with the operating system can be
  - command interpreter (MS-DOS as command.com or UNIX as shell)
  - window manager (MS Windows, macOS or UNIX X Window) as graphical interface
- User interfaces allow users to use system commands or mouse selections to interact with the operating system. User can develop or execute programs or applications, control I/O operations, monitor the system status, e.g., access file directory, display file content, print a file.
- Programming interface (a.k.a. API) is used by application developers to access (via system calls) operating system functions (system programs), hardware devices or system resources, e.g., display results on an I/O device (screen), write data to a file (disk device), instead of implementing those functions from scratch.

3. Answer:

If you give 'no' to the first two questions, it means OS is an indispensable component in any computer. To be a computer engineer/professional, you have no excuse not to learn OS. If you give 'yes' to the last two questions, you must learn OS in detail.

Self test

1) C
2) C
3) A
4) B
5) B
6) C