Homework 1: Introduction to Cloud Computing

Correct answers are labeled red bold.
Some necessary explanations are labelled blue.

Q1: Which of the following statements about this course are correct?

A. INFS3208 has three assignment tasks, one individual project, and a final exam.
B. The closed-book final exam is worth 50% to the final score and needs a double-pass (at least 25 marks).
C. The credit of GCP is $50 and should be used wisely.
D. All of the above.

Q2: Which of the following is not the business driver of Cloud Computing?

A. Ease of use.
B. Capacity planning.
C. Cost reduction.
D. Organizational agility.

Q3: What are the differences between Clustering and Grid Computing?

A. Both nodes in Clustering and Grid Computing should have same type of hardware and operating system (homogeneous). (Incorrect: In Clustering, nodes typically have the same type of hardware and operating system (homogeneous), although heterogeneous clusters also exist. In Grid Computing, nodes are usually heterogeneous, with different types of hardware and operating systems, but homogeneous grids can also be found in specific scenarios.)
B. Cluster nodes are often located close to each other, while nodes in Grid may be located at a huge distance from each other.
C. Cluster nodes are usually internally connected via a high-speed network (e.g. fiber cables, routers, and switches), while Grid nodes are connected through a relatively low-speed network (e.g. Internet).
D. Both B and C.

Q4: Which of the following are the pre-existing technologies that heavily impacted on Cloud Computing?

A. Clustering, Big Data, Artificial Intelligence.
B. Database, Grid Computing, Docker.
C. Clustering, Grid Computing, Virtualization.
D. None of the above.

Q5: Which of the following is NOT regarded as an IT resource in Cloud Computing?

A. Virtual Machines on physical servers.
B. Storage services (e.g. Dropbox/OneDrive/iCloud).
C. Software program.
D. **Portable USB Flash Drives.** (They are hardware, but not leased to cloud users.)

Q6: Which of the following statement is NOT correct?

A. Horizontal scaling is less expensive compared to vertical scaling in the cloud context.
B. Horizontal scaling normally does not need to turn off the machines or cluster while vertical scaling needs to shut down the machine, plug in more hardware and reboot.
C. **Upgrading your RAM on your desktop is a typical horizontal scaling solution.** (Adding more RAM in your desktop is a vertical scaling solution)
D. Vertical scaling often has a hardware limitation.

(Horizontal Scaling (Scaling Out): This involves adding more instances or machines to a system. For example, instead of having a single powerful server, you might have multiple smaller servers working together.
Vertical Scaling (Scaling Up): This involves adding more resources (CPU, RAM, etc.) to an existing machine. For example, upgrading the RAM or CPU of a single server to handle more load.)

Q7: What are the cloud delivery models for Virtual Machine and Google App Engine, respectively?

A. SaaS and PaaS.
B. IaaS and PaaS.
C. IaaS and SaaS.
D. None of the above.

(Virtual machine (VM) is typically associated with IaaS because it provides virtualized computing resources. VM users have control over the operating system, applications, and runtime environment.
Google App Engine (GAE) is a PaaS offering. It provides a managed platform for developing and hosting web applications at scale. GAE users manage their applications, while Google manages the infrastructure, runtime, and scalability.)

Q8: What computing resources do cloud users need to manage in Software-as-a-service?

A. Networking and storage. (Incorrect: Networking and storage are maintained by IaaS users)
B. Operation system. (Incorrect: OS is maintained by IaaS users)
C. Application and data. (Incorrect: Application and data are maintained by PaaS users)
D. None of the above.

Q9: What computing resources do cloud users need to manage in Platform-as-a-service?

A. Networking and storage. (Incorrect: Networking and storage are maintained by IaaS users)
B. Operation system. (Incorrect: OS is maintained by IaaS users)
C. Application and data.
D. None of the above.

Q10: What is a public cloud?

A. A publicly accessible and metered cloud environment owned by a third-party cloud provider.
B. A computing service that can only be accessed from a publicly shared computer.
C. A publicly accessible computing environment free of charge.
D. The cloud infrastructure that is provisioned for exclusive use by a single organization comprising multiple consumers (e.g., business units).

Q11: Which of the following software that lets you run multiple virtual machines on one physical server machine?

A. Host operation system.
B. Guest operating system.
C. Virtual machine management or hypervisor.
D. Virtual machine management or hypervisor.

Q12: Which description of Multitenancy is correct?

A. Multitenancy is used for cloud service implementations and for front-ends used to remotely manage cloud-based IT resources.
B. The multitenant application enables multiple users (tenants) to access the same application logic simultaneously.
C. Multitenant applications ensure that tenants have access to data and configuration information that are not their own.
D. All of the above.

(Multitenancy refers to a software architecture where a single instance of an application serves multiple customers or tenants. Each tenant's data is isolated and remains invisible to other tenants. This architecture is commonly used in cloud services to optimize resource usage and ensure scalability.)