

# **ITEC2210 Midterm**

**15 February 2023**

## **Exam Overview:**

**This exam is divided into two parts worth 20 and 10 marks respectively, for a total of 30 marks.**

- 1. The first section consists of multiple choice questions, each worth 1 mark. There are 20 questions worth 20 marks in total.**
- 2. The second section consists of long answer questions, each worth 5 marks for a total of 10 marks. There are two questions.**

**Name**

**Student Number**

## **Section 1, multiple choice**

**Choose the single *most* correct answer if there are questions with more than one correct answer. Extra space is provided after each question if for some reason you wish to elaborate on your answer.**

1. The SRE text describes a number of impediments to good troubleshooting. Which does not apply:

- (A) Irrelevant information.
- (B) Falsely correlated issues.
- (C) Improbable theories.
- (D) Correct understanding of a system.

2. What is an assertion within the context of launching a new service?

- (A) Verbal approval from the Chief Financial Officer.
- (B) An item on the readiness checklist with a deadline.
- (C) Something that must be either true or false.
- (D) A “must have” feature, without which the service cannot launch.

3. With proper planning, which of the following is unlikely to be encountered when launching a new service?

- (A) Lack of user training
- (B) Inadequate troubleshooting
- (C) Drift between environments
- (D) Missing staging environment

4. A Platform as a Service (PaaS) provider does not manage:

- (A) CPU and memory allocation.
- (B) Continuous integration.
- (C) Networking and load balancing.
- (D) Installed and available packages.

**Name**

**Student Number**

5. Which of the following statements about virtual machines is true?

- (A) HVMMs require patching the guest operating system drivers.
- (B) Paravirtual machines are less efficient than HVMMs.
- (C) HVMMs do not use a normal operating system for the VMM.
- (D) VMs can cause excessive resource contention.

6. Which of the following statements about containers is false?

- (A) Containers allow multiple versions of an application to run on a host or cluster.
- (B) HVM is not required to run a container environment.
- (C) Containers allow for the highest resource usage or density on a host or cluster.
- (D) Any operating system can run any guest container, regardless of operating system.

7. The acronym UDP stands for:

- (A) User Datagram Protocol
- (B) Unicast Datagram Protocol
- (C) Universal Data Protocol
- (D) Unidirectional Data Protocol

8. What should be avoided when troubleshooting?

- (A) Make the system work as well as it can when triaging an issue.
- (B) Ask why a problem is occurring before diagnosing an issue.
- (C) Use either successive refinement or elimination to diagnose an issue.
- (D) Bisection, which groups components and then allows troubleshooting within each group.

9. In terms of the OSI (Open Systems Interconnection) model, which is false?

- (A) The Session layer is part of the OSI model.
- (B) Layer violations are not possible.
- (C) Network devices can operate on multiple layers.
- (D) Packets are generally unchanged when traversing networks (layer 3).

10. Which is not a method of physically connecting hosts in a datacentre?

- (A) Central switch
- (B) Top of rack switch (TOR)
- (C) Virtual private network (VPN)
- (D) Spine and leaf switch fabric

**Name**

**Student Number**

11. The TCP/IP specification is designed around:

- (A) Maximum Transmission Unit (MTU) and Maximum Segment Size (MSS)
- (B) Routing and packet fragmentation
- (C) Ethernet devices and Spanning Tree Protocol
- (D) Virtual LANs (VLAN) and the 802.1Q standard

12. Virtual Machines are:

- (A) An inefficient way to share hardware resources.
- (B) Too slow for most enterprise workloads.
- (C) Faster than containers for most applications.
- (D) Suitable for development, staging, and production environments.

13. Virtual LANs (VLANs) are useful for:

- (A) Increasing backplane bandwidth between switches.
- (B) Broadcasting traffic to all systems connected to a switch.
- (C) Grouping and isolating computers across different physical networks.
- (D) Firewalling traffic from the Internet to a corporate Intranet.

14. Which of the following is true about containers?

- (A) Containers allow for maximum compute density.
- (B) A hypervisor is required to run containers.
- (C) Migrating containers between hosts is impossible.
- (D) Only Linux supports container technology.

15. Once you have a sufficiently described problem, what question should you ask when triaging an issue?

- (A) How can I fix the problem?
- (B) Is there a backup of the system's data?
- (C) What was the last thing that changed?
- (D) Who and what is affected?

**Name**

**Student Number**

16. What is the difference between a container and an image?

- (A) A container is for at rest data; an image is the running application.
- (B) A container runs multiple pods; an image is a snapshot of the pods to be run.
- (C) A container is a running application; an image is an application snapshot to be run
- (D) There is no difference between a container and an image.

17. Kubernetes is a:

- (A) Container orchestration tool
- (B) Type 1 Hypervisor
- (C) Virtual Machine Monitor
- (D) Microservice management tool

18. The **ls** command is used to:

- (A) Link a file from one location to another
- (B) List the contents of a directory
- (C) Display the contents of a file
- (D) Listen on an arbitrary TCP port

19. The **mv** command is used to:

- (A) Remove a file or directory
- (B) Make a new directory
- (C) Move a file or directory
- (D) Change the owner of a file or directory

20. The **cp** command is used to:

- (A) Create a file or directory
- (B) Output the contents of a file
- (C) Recursively list the contents of a directory
- (D) Copy a file or directory

**Name**

**Student Number**

## **Section 2, long answer**

1. What is cloud computing? Define each type of Service that makes up each level according to the PCSA chapter. Explain what each level is typically used for, and any advantages or disadvantages that you can think of for each. 5 marks.

**Name**

**Student Number**

2. Explain what happens at a DNS level when you type `http://itec2210.ca` into your browser. 5 marks.