



**ΠΑΜΙΒΙΑ UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF COMPUTING AND INFORMATICS**

DEPARTMENT OF COMPUTER SCIENCE

<b>QUALIFICATION: BACHELOR OF COMPUTER SCIENCE</b>	
<b>QUALIFICATION CODE:</b> 07BACS 07BCMS	<b>LEVEL:</b> 7
<b>COURSE:</b> SYSTEM VIRTUALISATION	<b>COURSE CODE:</b> SVT710S
<b>DATE:</b> JUNE 2022	<b>PAPER:</b> THEORY
<b>DURATION:</b> 3 HOURS	<b>MARKS:</b> 65

<b>FIRST OPPORTUNITY EXAMINATION QUESTION PAPER</b>	
<b>EXAMINER(S)</b>	MR. SHOOPALA NAMBAHU
<b>MODERATOR:</b>	MR. ANTON LIMBO

**THIS QUESTION PAPER CONSISTS OF 5 PAGES**

(Excluding this front page)

**INSTRUCTIONS**

1. Answer ALL the questions on the answer scripts.
2. Write clearly and neatly.
3. Number the answers clearly.

**PERMISSIBLE MATERIALS**

1. Calculator.

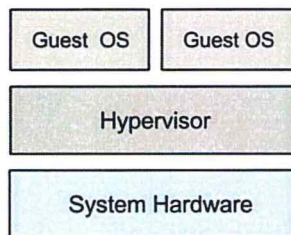
**Section A: (Multiple choice)**

**(20 Marks)**

1. Which of the following is associated with considerable vendor lock-in?
  - a) PaaS
  - b) IaaS
  - c) SaaS
  - d) SaaS
2. \_\_\_\_\_ computing refers to applications and services that run on a distributed network using virtualized resources.
  - a) Distributed
  - b) Cloud
  - c) Docker
  - d) Parallel
3. Which of the following benefit is related to create resources that are pooled together in a system that supports multi-tenant usage?
  - a) On-demand self-service
  - b) Broad network access
  - c) Resource pooling:
  - d) All of the mentioned
4. Which RAID type doesn't use parity for data protection?  
Point out the wrong statement :
  - a) RAID 1
  - b) RAID 6
  - c) RAID 4
  - d) RAID 5
5. Which of the following is true?
  - a) docker ps shows all running containers by default.
  - b) docker ps shows all containers by default
  - c) none of the mentioned
6. Cloud computing is an abstraction based on the notion of pooling physical resources and presenting them as a \_\_\_\_\_ resource.
  - a) real
  - b) virtual
  - c) cloud
  - d) none of the mentioned
7. \_\_\_\_\_ refers to the location and management of the cloud's infrastructure.
  - a) Service
  - b) Deployment
  - c) Application
  - d) None of the mentioned
8. Which of the following is deployment model?
  - a) public
  - b) private
  - c) hybrid
  - d) all of the mentioned

9. Which of the following is best known service model?
  - a) SaaS
  - b) IaaS
  - c) PaaS
  - d) All of the mentioned
10. Which of the following is a type of virtualization?
  - a) Storage
  - b) Desktop
  - c) CPU
  - d) All of the above
11. Which of the following dimension is related to organization's boundaries?
  - a) Physical location of data
  - b) Ownership
  - c) Security boundary
  - d) All of the mentioned
12. Which of the following is provided by ownership dimension of Cloud Cube Model?
  - a) Proprietary
  - b) Owner
  - c) Security ownership
  - d) All of the mentioned
13. The \_\_\_\_\_ cloud infrastructure is operated for the exclusive use of an organization.
  - a) Public
  - b) Private
  - c) Community
  - d) All of the mentioned
14. An array of disks is more likely to fail compared to a single disk. How is it that RAID arrays still manage to provide more data protection compared to a single disk?
  - a) Using either mirroring or striping
  - b) Using either mirroring or parity
  - c) Using better quality disks
  - d) Using dedicated hardware
15. When it comes to avoiding major outages, the use of server virtualization:
  - a) Reduces the frequency of hardware-related service outages
  - b) Has no material impact
  - c) Requires that levels of redundancy be increased in order to avoid an increase in outages affecting multiple applications/services
16. Which one of these is characteristic of RAID 5?
  - a) Distributed parity
  - b) No Parity
  - c) All parity in a single disk
  - d) Double Parity

17. SaaS supports multiple users and provides a shared data model through \_\_\_\_\_ model.
- single-tenancy
  - multi-tenancy
  - multiple-instance
  - all of the mentioned
18. Which one of these is characteristic of RAID 5?
- Distributed parity
  - No Parity
  - All parity in a single disk
  - Double Parity
19. Which type of Hypervisor is shown in the following figure?



- Type 1
  - Type 2
  - Type 3
  - All of the mentioned
20. On a particular server, within each virtual machine:
- You can run any version of Windows without regard for the version(s) running in the other virtual machines
  - The versions of Windows must be no more than one release level apart
  - The versions of Windows must be exactly the same

**Section B: True or False**

**(5 Marks)**

- A template is a point-in-time captured state of a VM that can be returned to over and over again.  
True/False
- NFS is one the two file systems to Hypervisor uses to manage the VM files  
True/False
- The main objective of network virtualization is to abstract network services into a virtual network.  
True/False
- One of the virtual provisioning best practices is to have HDD in a thin pool with the different RPM  
True/False
- Virtualization is a framework or methodology of dividing the program files of a computer into multiple execution environments.  
True/False
- Binary translation maps each Java source code to target instructions  
True/False



**Section C: Fill in the missing word**

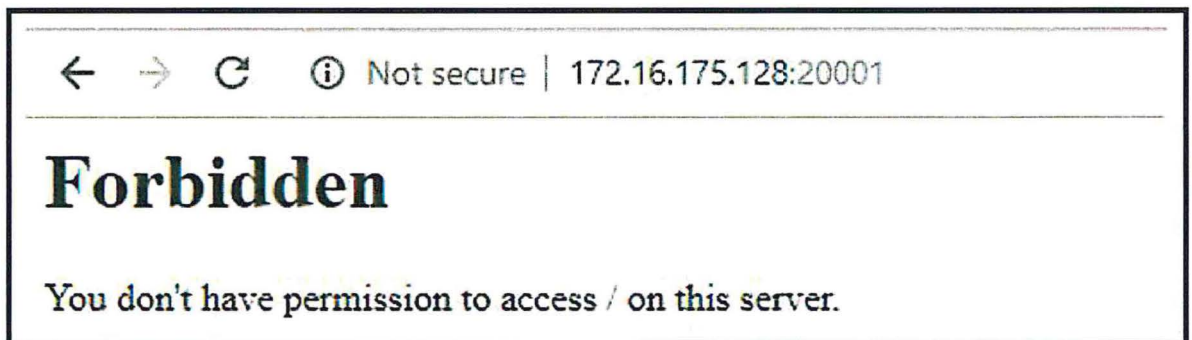
**[5 Marks]**

1. In a VMware environment, a .vmdk file represents a virtual machine's \_\_\_\_\_
2. \_\_\_\_\_ is used to automatically provide IP addresses for both physical and virtual servers.
3. A virtual machine connects from the virtual NIC to a \_\_\_\_\_
4. VMware Workstation is an example of a \_\_\_\_\_ hypervisor.
5. \_\_\_\_\_ is a storage technology that deals with how data is spread across multiple disks for both increased availability and improved performance.

**Section D**

**[35 marks]**

- 1) You are trying to access a web page that is being hosted under a Docker container using a web browser, but you are getting an error in diagram A.  
Name two possible ways to solve this problem permanently? [4 Marks]



**Diagram A**

- 2) You are a DEVOPS engineer for company XYZ, what command will you use to run a website in a docker container in the back ground with the following conditions. [4 Marks]
  - a. Using httpd image
  - b. The location for index.html file is /opt/web
  - c. Port number 14021
  - d. Container name is webpage
- 3) You are a system admin for company ABZ Pty. and you are required to set up a server in such way that the physical storage space is only allocated when the server needs it. How will you achieve this? [2 Marks]

- 4) Analyse the following Diagram B and answer the questions which follows. This Diagram is a screen shot from a Docker daemon.

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
0a61aa660d64	ubuntu	"bash"	42 seconds ago	Up 41 seconds		stoic_heisenberg
db2f896c0009	ubuntu	"bash"	2 minutes ago	Up 2 minutes		AAA
7cf7d550532f	ubuntu	"/bin/bash"	2 days ago	Exited (127) 2 days ago		nervous_agnes
af7ed0eb0e6e	ubuntu	"/bin/bash"	2 days ago	Exited (0) 2 days ago		dreamy_hamilton

[root@localhost ~]#

**Diagram B**

- a. Which command was typed to show the above screen shot? [ 2 Marks]
  - b. What command will you run if you want to remove the container with ID af7ed0eb0e6e? [2 Mark]
  - c. What is the Docker command will you run if you want to remove an Ubuntu image? [2 Marks]
- 5) What is the difference between **docker ps** and **docker ps -a** commands? [4 marks]
  - 6) Why does performance become poor at Instruction Set Architecture (ISA) Level? [2 Marks]
  - 7) Name three benefits of storage virtualization? [3 Marks]
  - 8) When is Thin Pool Rebalancing performed in storage virtualisation? [2 Marks]
  - 9) What is the mechanism used to prevent a virtual machine from being powered on by more than one host? [1 Mark]
  - 10) What is the difference between Hosted Architecture and Bare-Metal Architecture? [2 Marks]
  - 11) You are a Systems Administrator; you are required to create a new VM which is identical to the Webserver VM. What feature will you use to create a new VM? [1 Mark]
  - 12) When can you use P2V feature? [2 Marks]
  - 13) How is virtualization different from dual boot? [2 Marks]

**Good luck!!**