NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE

QUALIFICATION: BACHELOR OF COMPUTER SCIENCE	
QUALIFICATION CODE: 07BACS 07BCMS	**LEVEL:** 7
COURSE: SYSTEM VIRTUALISATION	**COURSE CODE:** SVT710S
DATE: JULY 2022	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 70

SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER(S)	MR. SHOOPALA NAMBAHU
MODERATOR:	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.

1. _____ computing refers to applications and services that run on a distributed network using virtualized resources.
   a) Distributed
   b) Cloud
   c) Docker
   d) Parallel

2. Which of the following is essential concept related to Cloud?
   a) Reliability
   b) Productivity
   c) Abstraction
   d) All of the mentioned

3. Which of the following is a type of virtualization?
   a) Storage
   b) Desktop
   c) CPU
   d) All of the above

4. Which of the following cloud concept is related to pooling and sharing of resources?
   a) Polymorphism
   b) Abstraction
   c) Virtualization
   d) None of the mentioned

5. 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

6. 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

7. _____ refers to the location and management of the cloud's infrastructure.
   a) Service
   b) Deployment
   c) Application
   d) None of the mentioned

8. 4. 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 will be the host operating system for Windows Server?
    a) Virtual Logix VLX
    b) Microsoft Hyper-V
    c) Xen
    d) All of the mentioned
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. Which of the following is another name for system virtual machine?
    a) Hardware virtual machine
    b) Software virtual machine
    c) Real machine
    d) None of the mentioned
14. _____ cloud is one where the cloud has been organized to serve a common function or purpose.
    a) Public
    b) Private
    c) Community
    d) All of the mentioned
15. Which of the following is a virtual machine technology now owned by Oracle that can run various operating systems?
    a) Vmachines
    b) VirtualBox
    c) ThoughtPolice
    d) None of the mentioned
16. _____ as a Service is a cloud computing infrastructure that creates a development environment upon which applications may be build.
    a) Infrastructure
    b) Service
    c) Platform
    d) All of the mentioned
17. _____ is a cloud computing service model in which hardware is virtualized in the cloud.
    a) IaaS
    b) CaaS
    c) PaaS
    d) None of the mentioned

18. Which of the following type of virtualization is also characteristic of cloud computing?
    a) Storage
    b) Application
    c) CPU
    d) All of the mentioned
19. Which of the following type of virtualization is found in hypervisor such as Microsoft's Hyper-V?
    a) paravirtualization
    b) full virtualization
    c) emulation
    d) none of the mentioned
20. What is the command used to convert a container into an image?
    a) docker push
    b) docker commit
    c) docker run
    d) docker dif

Section B: True or False   [5 Marks]

1. A template is a point-in-time captured state of a VM that can be returned to over and over again.
   True/False
2. In Virtualisation containment means running multiple workloads on a single host
   True/False
3. NFS is one the two file systems to Hypervisor uses to manage the VM files
   True/False
4. Failure of a single disk in a RAID 1 array will not result in permanent data loss.
   True/False
5. Virtualization is a framework or methodology of dividing the program files of a computer into multiple execution environments.
   True/False

Section B [45 marks]

1) In virtualization, what can be cloned, upgraded, and even moved from place to place, without ever having to disrupt the user applications? [1 Mark]

2) Name and explain two features that are used to multiply Virtual Machines [4 marks]

3) System virtualization can be achieved through three virtualization techniques, name them [3 Marks]

4) Using a diagram, illustrate the scope of control for software as a service (SaaS) [4 Marks]

5) What do you understand by the term Consolidation Ratio? [2 Marks]

6) What is the difference between hot and cold cloning [2 Marks]

7) Hypervisor uses two file systems to manage the VM files, name them [2 marks]

8) You are a DEVOPS engineer for company XYZ, what command will you run if you want to run a website in docker container in the back ground with the following conditions. [4 Marks]
   a.   Using httpd image
   b.   The location for index.html file is /webdata
   c.   Port number 1321
   d.   Container name is web

9) What do you understand by the term Thin Pool Rebalancing? [2 Marks]

10) What do you understand by the term Virtual Provisioning? [2 Marks]

11) Analyse the following Diagram A and answer the questions which follows. This Diagram is a screen shot from a Docker daemon.

```
REPOSITORY                            TAG       IMAGE ID        CREATED
centos-gcc                            latest    09ac174d7ffb    5 days ago
docker.io/httpd                       latest    d4a07e6ce470    12 days ago
docker.io/centos                      latest    9f38484d220f    4 weeks ago
docker.io/ubuntu                      latest    94e814e2efa8    4 weeks ago
docker.io/sequenceiq/hadoop-docker    latest    5c3cc170c6bc    3 years ago
[root@localhost ~]#
```
Diagram A
   a. Which command was typed to show the above screen shot? [2 Marks]

   b. What command will you run if you want to remove a centos image? [2 Marks]

   c. What is the Docker command to run a container in a background (detached) mode without allocating the TTY to it, not keeping STDIN open, using an Ubuntu image and get the bash shell in the container? [2 Marks]

12) What is the function of inventory the file in Ansible? [2 Marks]

13) How many minimum disk drives are needed for RAID1? [1 Mark]

5

14) In Raw Device Mapping (RDM) what makes it possible for the VMFS volume to access the LUN on the physical storage system? [2 Marks]

15) Discuss two different types of network virtualisation [4 Marks]

16) List down the essential characteristics of cloud computing? [4 Marks]

Good luck!!