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 2024	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 85

SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER	
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THIS QUESTION PAPER CONSISTS OF 4 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)**

Read each question carefully, and then select THE ANSWER that best fits the question

1. _____ are instances of Docker images that can be run using the Docker run command.
   a) Hub
   b) Container
   c) File
   d) Cloud

2. Running of containers is managed with the Docker _____ command.
   a) CREATE
   b) RUN
   c) INSERT
   d) SUDO

3. Network level virtualization in a SAN fabric can be implemented by having virtualization engine running in _____?
   a) HBA
   b) FC switch
   c) Raid array
   d) Any of the mentioned

4. Which RAID type doesn't use parity for data protection?
   a) RAID 1   b) RAID 4
   c) RAID 6   d) RAID 5

5. What is the minimum number of disks required for RAID1?
   a) 2
   b) 1
   c) 5
   d) 6

6. 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

7. Linux hardening solutions for Docker.
   a) Docker Machine SELinux
   b) GRSECe
   c) Both a and b
   d) None of the mentioned

8. A Docker registry is a place to store and distribute Docker...............
   a) Codes
   b) Files
   c) Images
   d) All of the above

9. Which of the following is Cloud Platform by Amazon?
   a) Azure
   b) AWS
   c) Cloudera
   d) All of the mentioned

10. Which of the following is associated with considerable vendor lock-in?
    a) PaaS
    b) IaaS
    c) CaaS
    d) SaaS

11. The _____ cloud infrastructure is operated for the exclusive use of an organization.
    a) Private
    b) Public
    c) Hybrid
    d) All of the above

12. A Docker registry is a place to store and distribute Docker..............
    a) Codes
    b) Files
    c) Images
    d) All of the above

13. 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

14. _____ refers to the location and management of the cloud's infrastructure.
    a) Service
    b) Deployment
    c) Application
    d) All of the mentioned

15. The "rmi" command in docker is used to?
    a) Save docker images to a tar archive
    b) Remove one or more docker images
    c) None
    d) Move image in remote to a different location

16. Which of the following is deployment model?
    a) Hybrid
    b) Private
    c) Public
    d) all of the mentioned

17. Which of the following is a type of virtualization?
    a) Storage
    b) Desktop
    c) CPU
    d) All of the above
18. Which RAID type doesn't use parity for data protection?
    a) RAID 1
    b) RAID 4
    c) RAID 6
    d) RAID 5
19. Tool that clusters many Engines and schedules containers.
    a) Docker Machine
    b) Docker Compose
    c) Docker Swarm
    d) None of the mentioned
20. Which of the following is the hardware requirement for a Hyper-V failover cluster?
    a) Shared Storage
    b) SSD Drive
    c) GPU
    d) All of the above

Section B: True or False   **(10 Marks)**
Read each statement below carefully and state whether false or true.

1. Virtualization is a framework or methodology of dividing the program files of a computer into multiple execution environments.
2. DNS is used to automatically provide IP addresses for both physical and virtual servers.
3. VMware Workstation is an example of a Type 1 hypervisor.
4. LUN is a storage technology that deals with how data is spread across multiple disks for both increased availability and improved performance.
5. The security issue has played the most important role in affecting Cloud computing acceptance.
6. The static binary translation takes the whole program code and target instruction set at once and translates it to the target architecture.
7. Hypervisors allow multiple virtual servers to run on a single host.
8. A virtual machine connects from the virtual NIC to a Virtual Switch
9. One of the community cloud deployment model's disadvantages is cost reduction.
10. In virtualization at Operating System Level, we keep the base O.S. same and install only the differences in each single Virtual machine.

Section C   **[55 marks]**

Answer all the questions in this section.

1. A company is considering moving its entire IT infrastructure to the cloud. What factors should they consider when choosing between public, private, or hybrid cloud deployment models?   [4]
2. A healthcare organization needs to deploy a new electronic health records (EHR) system. Which cloud deployment model would you recommend, and why?   [2]
3. A multinational corporation is looking to streamline its email and collaboration tools for employees across different geographic locations. Which cloud service model (IaaS, PaaS, SaaS) would you recommend for their email and collaboration needs?   [4]
4. A company needs high performance and has a limited budget for storage. Which RAID level would you recommend, and why?   [2]
5. Name three advantages of containers over virtual machines (VMs).   [3]
6. What is the difference between deployment model and service model in cloud computing?   [4]
7. How does hypervisor eliminates the need to overprovision of virtual disks   [2]
8. A company needs high performance and has a limited budget for storage. Which RAID level would you recommend, and why?   [2]
9. Describe the role of the Docker Registry in Docker architecture and name two of its types.   [4]
10. Name three layers where storage virtualization can be performed?   [3]
11. What is storage virtualization?   [2]
12. Explain two methods of expanding VMFS.   [4]
13. Name two benefits of Raw Device mapping (RDM).   [4]
14. What is the use of a playbook in Ansible?   [2]
15. Name and explain 2 fundamental requirements of a VMM as defined by Popek & Goldberg?   [4]
16. In virtualization, what can be cloned, upgraded, and even moved from place to place, without ever having to disrupt the user applications?   [1]
17. What is the function of inventory the file in Ansible?   [2]
18. List down the essential characteristics of cloud computing?   [4]
19. what do you understand by the term data sanitization   [2]

Good luck!!