



NAMBHIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE

QUALIFICATION: BACHELOR OF COMPUTER SCIENCE	
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COURSE: SYSTEM VIRTUALISATION	COURSE CODE: SVT710S
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DURATION: 3 HOURS	MARKS: 85

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
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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)

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

1. A Docker registry is a place to store and distribute Docker.....
 - a) Codes
 - b) Files
 - c) Images
 - d) All of the above
2. Which RAID type doesn't use parity for data protection?
 - a) RAID 6
 - b) RAID 4
 - c) RAID 1
 - d) RAID 5
3. 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
4. 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
5. Which of the following is a component of SAN?
 - a) Ethernet switch
 - b) Fibre Switch
 - c) Ethernet Card
 - d) None of the mentioned
6. Which service model offers a virtual machine for users to configure and manage?
 - a) SaaS
 - b) PaaS
 - c) IaaS
 - d) DaaS
7. Which cloud provider offers Google Cloud Platform?
 - a) Microsoft
 - b) IBM
 - c) Amazon
 - d) Google
8. Which of the following best defines OS-level virtualization?
 - a) Emulation of hardware
 - b) Hypervisor-based virtualization
 - c) Virtualization that runs multiple user-space instances on a single kernel
 - d) BIOS-level virtualization

9. Which technology uses OS-level virtualization?
 - a) VMware ESXi
 - b) VirtualBox
 - c) Docker
 - d) Xen
10. In OS-level virtualization, containers share the same:
 - a) CPU
 - b) Hardware
 - c) Kernel
 - d) Virtual machine
11. Which of the following is a disadvantage of OS-level virtualization?
 - a) All containers must use the same OS kernel
 - b) High memory overhead
 - c) Slower performance
 - d) Hardware dependency
12. Which command is used to list all Docker containers?
 - a) docker show
 - b) docker ps
 - c) docker status
 - d) docker list
13. Which of the following is a Type 1 hypervisor?
 - a) VMware Workstation
 - b) VirtualBox
 - c) KVM
 - d) VMware ESXi
14. What is the main role of a hypervisor?
 - a) Provide email services
 - b) Manage virtual machines
 - c) Encrypt data
 - d) Connect printers
15. Which of these is a key advantage of virtualisation?
 - a) Higher hardware costs
 - b) Reduced energy usage
 - c) Slower performance
 - d) Single OS support
16. What does IaaS stand for?
 - a) Internet as a Service
 - b) Infrastructure as a Service
 - c) Information as a System
 - d) Integration as a System
17. Which technology isolates processes at the OS level?
 - a) Virtual Machines
 - b) Hypervisors
 - c) Containers
 - d) RAID

18. Which cloud model provides software applications over the Internet?
- a) IaaS
 - b) PaaS
 - c) SaaS
 - d) DRaaS
19. Which tool is commonly used to manage virtual machines?
- a) ssh
 - b) docker
 - c) virt-manager
 - d) ping
20. What is a VM snapshot used for?
- a) Increase RAM
 - b) Create a new OS
 - c) Capture VM state for backup or restore
 - d) Update the hypervisor

Section B: True or False

(10 Marks)

Read each statement below carefully and state whether false or true.

1. Emulators are most useful when you need to test how software interacts with the attached input devices.
2. The hypervisor is a layer of software that resides above the virtual machines and below the hardware.
3. In RAID5 write data transactions are very fast while read data transactions are somewhat slower.
4. Virtual machines are configured to run with one or more processors, depending on the anticipated demand on the system.
5. Each virtual machine can be configured with only one network interface cards that represent a connection to a network.
6. Server Virtualisation solves the problem of tight coupling between CPU and RAM
7. Virtualization does not allow multiple OS's and workloads to run on the same physical hardware.
8. Emulation allows developers to see the real-time interactions between different hardware and software models.
9. Full virtualisation technique uses hardware emulation.
10. The main files that make up a VM are the configuration file and the virtual disk files.

Section D

[55 marks]

Answer all the questions in this section.

1. Why is containerization considered lightweight compared to virtual machines? [2]
2. How does Docker help you in managing and deploying your applications? [2]
3. What is the difference between scalability and elasticity in cloud computing? [4]
4. Name any three advantages of using cloud computing. [3]
5. List two popular cloud service providers. [2]
6. What is virtualization in the context of cloud computing? [2]
7. Explain the concept of "pay-as-you-go" in cloud computing. [2]
8. Name any four levels of virtualization implementation [4]
9. Why does the performance become poor in (ISA). [2]
10. Name and explain two types of hypervisors. [6]
11. 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? [3]
12. Why would you want to find out if the cloud provider performs a background check on employees while hiring them? [4]
13. Explain what Vendor Lock-In is in the context of cloud computing. [2]
14. How does the hypervisor eliminate the need for overprovisioning virtual disks? [2]
15. What is the difference between clones and snapshots [4]
16. What is the main objective of network virtualization? [2]
17. Discuss three different types of network virtualisation. [6]
18. What is the use of a playbook in Ansible? [2]
19. Name three layers where storage virtualization can be performed? [3]

Good luck!!