

B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Fifth to Seventh Semester

18CSE360T - INFORMATION STORAGE AND MANAGEMENT*(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)***Note:**

- i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
- ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours**Max. Marks: 100****PART - A (20 × 1 = 20 Marks)****Marks BL CO****Answer all Questions**

- _____ is the process of assigning storage resources to hosts based on capacity, availability, and performance requirements of applications running on the hosts.
(A) Storage Provisioning (B) Network Provisioning
(C) User Provisioning (D) Server Provisioning. 1 1 1
- Data is transferred between the disk controller and magnetic _____ through the read-write (R/W) head
(A) Spindle (B) Platter
(C) R/W head (D) Tape 1 1 1
- _____ is a technique of abstracting physical resources such as compute, storage and network and making them appear as logical resources
(A) Provisioning (B) Virtualization
(C) Monitoring (D) Reporting 1 1 1
- The storage architecture that cannot be shared with any other server is called
(A) Instance storage architecture (B) Information centric storage architecture
(C) Server centric storage architecture (D) Virtual storage 1 1 1
- Which one is not true?
(A) iSCSI gateway is used to enable communication between iSCSI host FC storage (B) iSCSI gateway works as bridge between FC and IP network
(C) iSCSI initiator is configured with gateway's IP address (D) iSCSI gateway is configured as FC target 1 2 2
- A company named Brocade Communications Systems LLC has the world wide name as 10:00:00:60:69:00:23:74. In the given name, identify the bits representing the company ID.
(A) 100000 (B) 000006
(C) 006069 (D) 606900 1 2 2
- Which three statements describe differences between Storage Area Network (SAN) and Network Attached Storage (NAS) solutions? Choose three.
i. SAN is generally more expensive but provides higher performance
ii. NAS uses TCP/IP for communication between hosts and the NAS server
iii. NAS requires additional hardware on a host: a host bus adapter for connectivity
iv. SAN uses proprietary protocols for communication between hosts and the SAN fabric.
(A) ii, iii, iv (B) i, ii, iii
(C) i, ii, iv (D) i, ii, iii

8. In the context of FC (Fibre Channel) and iSCSI (Internet Small Computer System Interface), what does "FC scan" typically refer to? 1 1 2
 (A) A network scanning tool (B) A method for detecting faulty cables
 (C) A process to discover Fibre Channel devices (D) A tool for analyzing internet traffic
9. This validation scheme is called the _____ scheme since transactions execute optimistically, assuming they will be able to finish execution and validate at the end. 1 1 3
 (A) Validation protocol (B) Validation-based protocol
 (C) Timestamp protocol (D) Optimistic concurrency-control
10. In backup to tape environment, what does 'shoe shining' mean? 1 2 3
 (A) Writing data from multiple streams on a single tape (B) Process of emulating disk drives and presenting as tapes to backup software
 (C) Repeated back and forth motion that a tape drive makes when there is an interruption in the backup data stream (D) Process of deleting redundant content in the backup data
11. Consider a 24-bit FC address of N_Port. There are 239 available addresses for domain ID. Therefore, the maximum possible number of node ports in a switched fabric is _____. 1 2 3
 (A) 61,184 (B) 65,536
 (C) 57,121 (D) 15,663,104
12. A repository at a remote site where data can be periodically or continuously copied 1 1 3
 (A) Data vault (B) Hot site
 (C) Cold Site (D) Server Cluster
13. Network security can be configured on the FC switch by using 1 1 4
 (A) integrity check (B) security check
 (C) data control lists (D) access control lists
14. Eaves dropping and snooping refers to 1 2 4
 (A) modification attack (B) types of passive attack
 (C) types of active attack (D) denial of service
15. Security monitoring also helps to track unauthorized configuration changes of storage 1 1 4
 (A) Infrastructure elements (B) substitute elements
 (C) backup elements (D) data elements
16. Which technique is used for the detection of errors caused by noise or other impairments during transmission from the transmitter to the receiver? 1 1 4
 (A) Error Correction (B) Error Detection
 (C) Availability (D) Accountability
17. _____ is a control mechanism on the switches that segments the network into specific paths to be used for the data traffic 1 1 5
 (A) Snooping (B) Vulnerability
 (C) Zoning (D) Denial of service
18. A _____ hosts an active cloud service and is further accessed by a cloud consumer for administrative purposes. 1 1 6
 (A) Virtual Server (B) Physical server
 (C) Logical server (D) Database Server

19. _____ technology is used to implement the resource replication mechanism to replicate cloud-based IT resources. 1 1 6
 (A) Cloud computing (B) Virtualization
 (C) Data privacy (D) Encryption
20. In cloud storage level, _____ are the lowest level of storage and the closest to the hardware. 1 1 6
 (A) Files (B) Datasets
 (C) Blocks (D) Objects

PART - B (5 × 4 = 20 Marks)

Answer any 5 Questions

Marks BL CO

21. Differentiate virtual and traditional storage provisioning. 4 2 1
22. A medical college uses an application that stores patient X-ray data in the form of large binary objects in an Oracle database. The application is hosted on a UNIX server, and the medical college staff accesses the X-ray records through a Gigabit Ethernet backbone. Storage array provides storage to the UNIX server, which has 6 terabytes of usable capacity. Explain the core elements of the data center. 4 2 2
23. A cloud consumer is using a virtual server within an IaaS environment, second one is accessing the a ready-made PaaS environment, third is using the SaaS. Discuss the challenges faced by Service provider. 4 3 3
24. A university is considering implementing storage. They do not have a current storage infrastructure to use, but they have a network that gives them good performance. Discuss whether native or bridged iSCSI should be used and explain your recommendation. 4 3 3
25. Compare the policies of file sharing protocols supported by NAS to handle file I/O request to a remote file system. 4 1 3
26. Write short notes on charge back report 4 1 5
27. List out the steps for Kerberos authentication. 4 1 6

PART - C (5 × 12 = 60 Marks)

Answer all Questions

Marks BL CO

28. (a) How will you create and navigate a virtual storage machine? 12 1 1
 (OR)
- (b) (i) A group of friends are doing a project and wanted to expand their business by creating a virtual environment. They were confused in choosing the service provider. What are the challenges faced by the consumers.
 (ii) Uninterrupted service of Data Centers is critical for success of Business. Explain the characteristics of a data center that ensures reliable Data.
29. (a) Demonstrate the details of CAS an object-based storage device designed for secure online storage and retrieval of fixed content with needed features for configuration and Tracing. 12 4 2
 (OR)
- (b) A large company is considering a storage infrastructure one that is scalable and provides high availability. More importantly, the company also needs performance for its mission-critical applications. Which storage topology would you recommend (SAN, NAS, IP SAN) and why?

30. (a) (i) Provide real-world examples of how the below concept apply to different industries or organizations. 12 4 3
(ii) A system has three components and requires all three to be operational 24 hours, Monday through Friday. Failure of component 1 occurs as follows:
Monday = No failure
Tuesday = 5 a.m. to 7 a.m.
Wednesday = No failure
Thursday = 4 p.m. to 8 p.m.
Friday = 8 a.m. to 11 a.m.
Calculate the MTBF and MTTR of component 1.
(OR)
(b) (i) List and briefly describe the steps involved in Backup and restore operations with the necessary diagram.
(ii) BC planning often involves multiple stakeholders, including executives, IT professionals, employees, and external partners. Using a common set of terms ensures that everyone involved in BC activities can communicate effectively and understand the concepts being discussed. This common language facilitates collaboration and coordination during planning and response efforts. BC planning assigns specific roles and responsibilities to individuals or teams. When everyone understands the terminology, they can clearly define their roles and know what is expected of them during a disruption. This clarity helps ensure that critical tasks are executed correctly and in a timely manner.
31. (a) Illustrate Performance monitoring with a neat sketch . 12 2 5
(OR)
(b) Explain in detail about one way and two way of Securing Implementation in IP SAN.
32. (a) Explain the selection procedure of deployment model for cloud. 12 2 6
(OR)
(b) Describe the following with necessary diagrams:
a) Cloud deployment Models
b) Cloud Service Models

* * * * *