

Name:	 UPES UNIVERSITY WITH A PURPOSE
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Storage Technology Foundation
Program: B.Tech CSE+MT
Course Code: CSIB 255

Semester: VIII
Time 03 hrs.
Max. Marks: 100

Instructions: All Questions are compulsory

SECTION A

S. No.	Question	Marks	CO
Q 1	Write a note on information life cycle of sales order application.	4	CO1
Q 2	Explain the process of addressing in SCSI Model.	4	CO4
Q 3	Differentiate between Block access and File access.	4	CO2
Q 4	Discuss various Fiber Channel topologies.	4	CO2
Q 5	What is the difference between internal and external data transfer rates?	4	CO1

SECTION B

Q 6	Discuss the various components of NAS along with its protocols. Also, discuss in what cases do we require NAS storage environment?	10	CO3
Q 7	In Hard Disk, R/W heads takes 60ms to move between tracks, spindle rotates the platters at the rate of 12000 rpm, it takes around 15ms for queuing delay, controller overhead and transfer time. Calculate the average access time of a Hard Disk.	10	CO2
Q 8	Explain various IP storage deployment models in detail? Also, list the protocols used for block storage over IP.	10	CO3,C O4
Q 9	a) Managing a modern, complex storage data center involves many tasks. Explain each of them in detail. <p style="text-align: center;">OR</p> b) Discuss in detail the role of core elements of data center in supporting business activities.	10	CO5

SECTION-C

Q 10	a) A manufacturing corporation uses tape as its primary backup storage media throughout the organization: <ul style="list-style-type: none"> • Full backups are performed every Sunday. • Incremental backups are performed Monday through Saturday. • The environment contains many backup servers, backing up different groups of servers. • The e-mail and database applications have to be shut down during the backup 	20	CO4,C O5
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	<p>process. Due to the decentralized backup environment, recover-ability is often compromised. There are too many tapes that need to be mounted to perform a full recover in case of a complete failure. The time needed to recover is too lengthy. The company would like to deploy an easy-to-manage backup environment. They want to reduce the amount of time the e-mail and database applications are unavailable, and reduce the number of tapes required to fully recover a server in case of failure. Propose a backup and recovery solution to address the company's needs. Justify how your solution ensures that their requirements will be met.</p> <p style="text-align: center;">OR</p> <p>b) Compare various storage environments on the basis of following parameters: Market Value, Type, Technologies used, Hierarchy, Storage Type, Environment, Scalability, Storage Consolidation, Fault Tolerance, Access Modes, Complexity, Availability, Management Cost.</p>		
Q 11	<p>Business continuity is the preparation for, response to and recovery from an application outage that adversely affects business operations. To maintain it, business continuity solutions are proposed, backup and restore is among one of them. Explain how it works with step-wise operation.</p>	20	CO4,C O5

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SECTION A

S. No.		Marks	CO
Q 1	Illustrate the RAID implementation in SAN.	4	CO1
Q 2	Explain the process of write back and write through cache?	4	CO2
Q 3	Storage systems have their own cache. Why?	4	CO2
Q 4	Write short note on SNMP and SMI.	4	CO4
Q 5	What are the constraints meeting the key requirements of Data Center.	4	CO5

SECTION B

Q 6	SAN is logically segmented into groups using access management technique. Justify this statement.	10	CO3
Q 7	What are the different types of Backup Granularity? Recommend with different cases?	10	CO4
Q 8	Discuss the impact of random and sequential I/O in different RAID configurations?	10	CO3
Q 9	a) Discuss the evolution of various storage technology and its architecture. <b style="text-align: center;">OR b) Explain various types of data. What are the challenges of storing and managing unstructured data?	10	CO4,C O1

SECTION-C

Q 10	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?	20	CO3,C O4
Q 11	a) What are the causes of downtime? Explain business continuity planning lifecycle? What are the different ways to maintain business continuity? <b style="text-align: center;">OR b) Choosing the best storage option for your business really comes down to deciding which network criteria are most important. Once you know which	20	CO4,C O5

	<p>factors are essential to your business operations, you can find the storage options to fit your particular needs. Discuss the different network criterion, scenarios and for that select appropriate storage option available.</p>		
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