

MANIPAL INSTITUTE OF TECHNOLOGY

, A Constituent Institution of Manipal University

II SEMESTER M.TECH. DEGREE END SEMESTER EXAMINATION APR/MAY 2017

SUBJECT: INFORMATION STORAGE AND MANAGEMENT [CSE 5281] (OPEN ELECTIVE) DATE: 03/05/2017

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ALL the questions.
- ✤ Missing data may be suitable assumed.

1 A .	Discuss any two of the factors that affect the performance of the disk drives.	4M
1B.	The average I/O size of an application is 64 KB. The following specifications are available from the disk manufacturer: average seek time = 5 ms, 7,200 RPM, and transfer rate = 40 MB/s. Determine the maximum IOPS that could be performed with this disk for the application. Using this case as an example, explain the relationship between disk utilization and IOPS.	3М
40	What are the factors that have contributed to the growth of digital data?	5141
16.	Discuss them.	3M
2A.	With diagram discuss the principles of Dual parity RAID. What are the advantages of this RAID over the other RAID levels?	3M
2B.	Consider an application that generates 5200 IOPS, with 60% of them being READS. What is the disk load in RAID 5 and 1? Also compute the number of disks required for an HDD with maximum 180 IOPS.	3M
2C.	With diagram and methods of write operations explain how write operations with the cache provide performance advantages over writing directly to disks.	4M
3A.	With a neat diagram of data transmission in FC-SW topology, explain the communication between an initiator node with a target node.	4M
3B.	What are the types of NAS implementation? Discuss them with neat diagrams.	3М
3C.	Define the various types of ports on FC network.	3M
4A.	With a neat diagram explain the steps involved in the process of data retrieval from CAS system. Give any one of the examples which deploys CAS solutions to solve business problems.	4M
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- **4B.** Prepare a table containing three, four, five and six- 9's representation for availability metrics showing amount of downtime allowed for a service. Show your downtime calculations. Define Information Availability with the help of Accessibility and timeliness.
- **4M**
- 4C. What are the user specified load-balancing policies followed by the PowerPath? Discuss.2M
- 5A. Illustrate with examples an incremental and cumulative backup and restoration. What are the advantages and disadvantages of one over the other?
- **5B.** Write a short note on creating multiple replicas at different point in time. **3M**
- **5C.** What is storage array based remote replication? List out all the types of storage array based remote replication.