*Total No. of Questions: 6* *Total No. of Printed Pages:3*

**Enrollment No.....**

# Faculty of Engineering

## End Sem (Odd) Examination Dec-2019

## CA5EL21 Information Storage & Management

Programme: MCA Branch/Specialisation: Computer Application

**Duration: 3 Hrs.** **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. Which of the following is sequential access storage device? **1**

(a) Hard Disk (b) CD-ROM

(c) Tape Cartridge (d) Main Memory

ii. A system has MTBF of 100,000 hours and MTTR of 30 minutes. What is the average down time of the system in one year? **1**

(a) 2.6 minutes (b) 1.8 minutes

(c) 18 minutes (d) 30 minutes

iii. This is the activity of copying files or databases so that they will be preserved in case of equipment failure or other catastrophe. **1**

(a) Snapshot (b) Replication

(c) Backup (d) Archival

iv. I/O requests to disk storage on a SAN are called **1**

(a) Block I/Os (b) File I/Os

(c) SAN I/Os (d) Disk I/Os

v. Which one of these is characteristic of RAID 5? **1**

(a) Double Parity (b) No Parity

(c) All parity in a single disk (d) Distributed parity

vi. Which of the following is not a feature of LVM? **1**

(a) Independent of disk location

(b) Concatenation and striping of storage systems

(c) Protection against disk failures

(d) Snapshot capability

P.T.O.

vii. The common mechanism used to find latent failure in memory modules: **1**
(a) Scrubbing (b) Sniffing
(c) Swapping (d) Paging

viii. Inode bitmaps used for **1**
(a) Data blocks
(b) block allocation
(c) Inode allocation and deallocation,
(d) All of these

ix. This is the process of assigning storage, usually in the form of server disk drive space, in order to optimize the performance of a storage area network. **1**
(a) Storage assignment (b) Data mining
(c) Storage Provisioning (d) Data Warehousing

x. Maximum number of SATA devices that can be connected through SATA is **1**
(a) 15 (b) 8 (c) 5 (d) 1

Q.2 i. List down the various storage technologies with example. **2**
ii. Why data categorization is required? **3**
iii. What are benefits of Information lifecycle Management? **5**
OR iv. What are the key Storage Infrastructure Components? **5**

Q.3 Attempt any two:
i. Discuss the impact of Random and Sequential I/O in different RAID Configuration. **5**
ii. Discuss the different core components and working of Hard Disk Drive (HDD). **5**
iii. What do you understand by data mapping? Explain its various types. **5**

Q.4 Attempt any two:
i. What would you consider while choosing serial or parallel data transfer in a DAS implementation? Explain your answer and justify your choice. **5**
ii. What is FC Port? How does flow control work in an FC network? **5**



iii. Differentiate between NAS, CAS and SAN on the basis of architectural benefits. **5**

Q.5 Attempt any two:
i. Briefly explain the different activity related to the storage management. **5**
ii. How can a block–level virtualization implementation be used as a data migration tools? And also explain how data migration will be accomplished. **5**
iii. What is disaster recovery ? Explain the importamce of disaster recovery planning?. **5**

Q.6 Attempt any two:
i. Briefly explain the Kerberos authorization process with diagram. **5**
ii. What is SAN? Explain the SAN Security architecture. **5**
iii. Describe Monitoring storage infrastructure components with example. **5**

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## Marking Scheme

## CA5EL21 Information Storage & Management

| | | | | |
|---|---|---|---|---|
| Q.1 | i. | Which of the following is sequential access storage device?<br>(c) Tape Cartridge | | **1** |
| | ii. | A system has MTBF of 100,000 hours and MTTR of 30 minutes. What is the average down time of the system in one year?<br>(a) 2.6 minutes | | **1** |
| | iii. | This is the activity of copying files or databases so that they will be preserved in case of equipment failure or other catastrophe.<br>(c) Backup | | **1** |
| | iv. | I/O requests to disk storage on a SAN are called<br>(a) Block I/Os | | **1** |
| | v. | Which one of these is characteristic of RAID 5?<br>(d) Distributed parity | | **1** |
| | vi. | Which of the following is not a feature of LVM?<br>(c) Protection against disk failures | | **1** |
| | vii. | The common mechanism used to find latent failure in memory modules:<br>(b) Sniffing | | **1** |
| | viii. | Inode bitmaps used for<br>(c) Inode allocation and deallocation | | **1** |
| | ix. | This is the process of assigning storage, usually in the form of server disk drive space, in order to optimize the performance of a storage area network.<br>(c) Storage Provisioning | | **1** |
| | x. | Maximum number of SATA devices that can be connected through SATA is<br>(a) 15 | | **1** |
| Q.2 | i. | Various storage technologies with example. | | **2** |
| | | List | 1 mark | |
| | | Example | 1 mark | |
| | ii. | Data categorization is required | | **3** |
| | | Explanation | 2 marks | |
| | | Example | 1 mark | |
| | iii. | Benefits of Information lifecycle Management | | **5** |
| | | Explanation | 2 marks | |
| | | List down benefits | 3 marks | |
| OR | iv. | Key Storage Infrastructure Components | | **5** |
| | | List of components | 3 marks | |
| | | Explanation | 2 marks | |
| Q.3 | | Attempt any two: | | |
| | i. | Impact of Random and Sequential I/O in different RAID Configuration. | | **5** |
| | | 1 mark for each point | (1 mark * 5) | |
| | ii. | Hard Disk Drive (HDD) core components | 2 marks | **5** |
| | | Working of Hard Disk Drive (HDD) | 2 marks | |
| | | Diagram | 1 mark | |
| | iii. | Definition of data mapping | 2 marks | **5** |
| | | Its various types | 3 marks | |
| Q.4 | | Attempt any two: | | |
| | i. | What would you consider while choosing serial or parallel data transfer in a DAS implementation? | | **5** |
| | | Explanation | 3 marks | |
| | | Justification | 2 marks | |
| | ii. | Definition FC Port | 2 marks | **5** |
| | | Flow control work in an FC network | | |
| | | 1.5 mark for each point (1.5 marks * 2) | 3 marks | |
| | iii. | Differentiate between NAS, CAS and SAN | | **5** |
| Q.5 | | Attempt any two: | | |
| | i. | Storage management activity | | **5** |
| | | 1 mark for each point | (1 mark * 5) | |
| | ii. | Block–level virtualization implementation be used as a data migration tools | 3 marks | **5** |
| | | Data migration | 2 marks | |
| | iii. | Definition of disaster recovery | 2 marks | **5** |
| | | Importamce of disaster recovery planning | 3 marks | |
| Q.6 | | Attempt any two: | | |
| | i. | Kerberos authorization process | 4 marks | **5** |
| | | Diagram | 1 mark | |
| | ii. | Definition of SAN | 2 marks | **5** |
| | | SAN Security architecture | 3 marks | |
| | iii. | Monitoring storage infrastructure components | 2 marks | **5** |
| | | Example | 3 marks | |

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