


<b>Name:</b>	 <b>UPES</b> UNIVERSITY WITH A PURPOSE
<b>Enrolment No:</b>	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**Online End Semester Examination, May 2021**

**Course: Storage Technology Foundation**  
**Program: B.Tech. CSE**  
**Course Code: CSEG 2012**

**Semester: IV**  
**Time: 3 hrs.**  
**Max. Marks: 100**

**SECTION A (30 marks)**

1. Each Question will carry 5 marks.
2. Instruction: Complete the Statement/Select the correct answer(s)

S.No.	Question	CO
<b>Q1</b>	<p>(a) An IO system with a single disk gets on average 50 I/O requests per second and average time for a disk to service an I/O request is 10ms, utilization of I/O system would be ____.</p> <p style="padding-left: 20px;">(i) 0.5      (ii) 0.2      (iii) 0.75      (iv) 5</p> <p>(b) Identify the wrong statement about JBOD.</p> <p style="padding-left: 20px;">(i) It can combine hard disks of different sizes into a single unit without loss of any capacity</p> <p style="padding-left: 20px;">(ii) If a drive in a JBOD set dies then it may be easier to recover the files on the other drives</p> <p style="padding-left: 20px;">(iii) It supports data redundancy</p> <p style="padding-left: 20px;">(iv) It does not have any storage controller intelligence</p>	CO1
<b>Q2</b>	<p>(a) In a system, disk request has come to a disk drive for cylinder 10 when the disk drive is reading from cylinder 20. The seek time is 6ms per cylinder. The seek time to service the request is ____.</p> <p style="padding-left: 20px;">(i) 60ms      (ii) 6ms      (iii) 3ms      (iv) 30ms</p> <p>(b) Identify the Information Management Tool(s)</p> <p style="padding-left: 20px;">(i) EndNote      (ii) Mendeley      (iii) RefWorks      (iv) Zotero      (v) All the mentioned</p>	CO1
<b>Q3</b>	<p>(a) Drive manufacturers generally advertise the unformatted capacity - for example, a disk advertised as being 500GB will only hold 465.7GB of user data, and the remaining 34.3GB is used for ____.</p> <p style="padding-left: 20px;">(i) storing checksum or parity      (ii) metadata</p> <p style="padding-left: 20px;">(iii) compression/decompression ratio      (iv) proprietary data</p> <p>(b) The three main components in the Storage System environment are ____.</p> <p style="padding-left: 20px;">(i) Host, CPU, IO devices      (ii) ALU, Control Unit, and Memory Unit</p> <p style="padding-left: 20px;">(iii) CPU, Storage, and IO devices      (iv) Host, Connectivity and Storage</p>	CO2
<b>Q4</b>	<p>(a) ____ is a specialized outlet that enables connectivity between the host and external devices.</p> <p style="padding-left: 20px;">(i) Port      (ii) Jack      (iii) Bus      (iv) Switch</p> <p>(b) Each physical volume is partitioned into equal-sized data blocks called ____ when the volume group is created.</p> <p style="padding-left: 20px;">(i) page      (ii) block      (iii) physical extent      (iv) PVIDs</p>	CO2

Q5	<p>(a) Remote site where data is periodically/continuously copied either to tape drives or disks. A copy is always at another site.  <i>(i) Data Vault (ii) Hot site (iii) Cold site (iv) Storage Cluster</i></p> <p>(b) Implementing security controls at each access point of every access path.  <i>(i) Access path (ii) Threat (iii) Defense in depth (iv) Vulnerability</i></p>	CO5
Q6	<p>(a) Identify the Storage Security Domains. (1) Application access, (2) Core-Edge Network, (3) Management access, (4) Secondary Storage, (5) BURA, (6) Data Storage  <i>(i) 1, 2, 4 (ii) 1, 2, 3 (iii) 1, 2, 4, 6 (iv) 1, 3, 5</i></p> <p>(b) Which of the following are Storage Information Management Activities? (1) Availability Management, (2) Capacity Management, (3) Performance Management, (4) Security Management, (5) Reporting  <i>(i) 1, 2, 4 (ii) 1, 3, 5 (iii) 1, 2, 3, 5 (iv) All the mentioned</i></p>	CO5
<p><b>SECTION B (50 marks)</b></p> <p><b>1. Each Question will carry 10 marks.</b>  <b>2. Instruction: Write short/brief notes.</b></p>		
Q7	<p>(a) What is Information Lifecycle? Explain with an example. (5 marks)  (b) Mention the key challenges in managing information? (5 marks)</p>	CO1
Q8	Provide a thorough note on the logical components of the host.	CO2
Q9	Discuss about the features which form an essential part of any CAS solution.	CO3
Q10	Explain the types of NAS Implementations.	CO3
Q11	<p>Elucidate on:</p> <p>(a) Business Continuity Plan Lifecycle.  <b>(OR)</b>  (b) Monitoring the Storage Infrastructure.</p>	CO5
<p><b>SECTION-C (20 marks)</b></p> <p><b>1. Each Question will carry 20 marks.</b>  <b>2. Instruction: Write long answer. Internal choice available.</b></p>		
Q12	<p>Explain with neat diagrams the following:</p> <p>(a) FCP stack, FC Frame and FC Addressing. (10+5+5 marks)  <b>(OR)</b>  (b) iSCSI protocol stack, iSCSI PDU, FCIP protocol stack. (10+5+5 marks)</p>	CO4