

Hall Ticket Number:

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Code No. : 17654 (C) N/O

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD***Accredited by NAAC with A++ Grade***B.E. (I.T.) VII-Semester Main & Backlog Examinations, Dec.-23/Jan.-24****Information Storage and Management (PE-III)**

Time: 3 hours

Max. Marks: 60

*Note: Answer all questions from Part-A and any FIVE from Part-B**Part-A (10 × 2 = 20 Marks)*

Q. No.	Stem of the question	M	L	CO	PO
1.	Identify the logical and physical components from the following CPU, Operating system, device, Application programs.	2	3	1	1
2.	Explain various components of CPU.	2	2	1	1
3.	Explain Mirroring technique.	2	2	2	1
4.	Identify back-end controllers in intelligent storage systems.	2	3	2	2
5.	What are the benefits of using FC-SAN?	2	1	3	1
6.	How is iSCSI packet encapsulated in an IP packet?	2	1	3	1
7.	Define reliability of a storage network.	2	1	4	1
8.	Give examples of planned outages.	2	1	4	1
9.	Name the security goals for which information security framework is built.	2	1	5	1
10.	List storage security domains.	2	1	5	1
<b>Part-B (5 × 8 = 40 Marks)</b>					
11. a)	Explain the logical components of the host.	4	2	1	1
b)	The average seek time is 5ms in a random I/O environment. Disk rotation speed is 15,000 rpm and internal disk transfer rate is 40 MB/s. Considering the block size of 32KB what is the maximum number of IOPS serviced.	4	3	1	2
12. a)	Differentiate between hardware and software RAID.	4	2	2	1
b)	Explain write operation with cache.	4	2	2	1
13. a)	Explain various connectivity options supported by fiber channel architecture.	4	2	3	1
b)	An organization wants to implement a full mesh FC SAN. Following is the specification. No: of hosts are 30 and each host has two single port HBAs. No: of storage arrays are 4 and each array has eight front end ports. The Modular FC switch has 32 ports. How many switches and ISL are required to meet the given requirement?	4	4	3	2

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14. a)	Discuss the consistency of a replicated file system.	4	2	4	1
b)	The reliability of fiber optic cable is 99.5%. The reliability of coaxial cable is 98.7% and reliability of twisted pair cable is 97.3%. Calculate the reliability percentage if all the cables are connected in parallel.	4	4	4	2
15. a)	Explain accessibility monitoring. Draw the diagram for the following consider an implementation in a storage infrastructure with three servers: H1, H2, and H3. All the servers are configured with two HBAs, each connected to the production storage array through two switches, SW1 and SW2. All the servers share two storage ports on the storage array. How will you monitor accessibility of the storage?	4	4	5	2
b)	A system has three components and requires all three components to be operational during 8 a.m. through 5 p.m. business hours, Monday through Friday. Failure of component 2 occurs as follows: <ul style="list-style-type: none"> <li>• Monday = 8 a.m. to 11 a.m.</li> <li>• Tuesday = No failure.</li> <li>• Wednesday = 4 p.m. to 7 p.m.</li> <li>• Thursday = 5 p.m. to 8 p.m.</li> <li>• Friday = 1 p.m. to 2 p.m.</li> </ul> Calculate the availability of component 2.	4	4	5	2
16. a)	What are the key characteristics of a data center?	4	1	1	1
b)	Find the number of page faults for the access sequence of pages A, B, C, D, E, D, F in Least Recently Used algorithm with 4 page-frames.	4	3	2	2
17.	Answer any <i>two</i> of the following:				
a)	Explain about fiber channel protocol stack.	4	2	3	1
b)	What is backup granularity? Name different backup granularity? A college wants to implement fault tolerant storage solution for its faculty and students for maintaining marks and attendance. Which backup granularity is suitable for this case?	4	4	4	2
c)	Explain the key elements of risk triad.	4	2	5	1

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	40%
iii)	Blooms Taxonomy Level – 3 & 4	40%

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