Basavarajeswari Group of Institutions **2022 SCHEME**

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT
(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

USN ☐☐☐☐☐☐☐☐☐☐   **Course Code** | 2 | 3 | M | C | A | 4 | 2 | 2 |

Fourth Semester MCA Degree Examinations, September 2025
STORAGE AREA NETWORK

Duration: 3 hrs   **Max. Marks: 100**

Note: *1. Answer any **FIVE** full questions, choosing **ONE** full question from each module.*
        2. Missing data, if any, may be suitably assumed

Q. No		*Question*	*Marks*	*(RBTL:CO: PI)*
		MODULE – 1		
1.	**a.**	What is data center? Explain core elements of data center infrastructure with neat diagram example.	**10**	**(2:1:2.6.5)**
	b.	Discuss virtualization and its applications.	**10**	**(2:1:1.7.1)**
		(OR)		
2.	**a.**	Explain disk drive components with systematic diagram.	**10**	**(3:1:2.6.3)**
	b.	Define cloud computing. Explain key characteristics of cloud computing and illustrate different cloud computing models.	**10**	**(2:1:1.7.1)**
		MODULE – 2		
3.	**a.**	Define RAID. Explain software and hardware RAID implementation.	**10**	**(2:2:2.5.1)**
	b.	Discuss striping in detail.	**10**	**(3:2:2.6.3)**
		(OR)		
4.	**a.**	Explain the concept of nested RAID. Illustrate with the diagram.	**10**	**(3:2:1.7.1)**
	b.	What is mirroring? Discuss RAID -3 and RAID -5 levels in –detail.	**10**	**(2:2:1.7.1)**
		MODULE – 3		
5.	**a.**	Discuss any two NAS implementation.	**10**	**(2:3:2.6.3)**
	b.	Discuss different factors affecting NAS performance.	**10**	**(2:3:2.6.5)**
		(OR)		
6.	**a.**	Demonstrate NAS file-sharing protocols with their features.	**10**	**(3:3:2.6.3)**
	b.	Explain components of NAS with neat diagram.	**10**	**(4:3:2.8.4)**
		MODULE – 4		
7.	**a.**	Explain server based and server-less backup in the NAS environment.	**10**	**(2:4:2.5.1)**
	b.	Explain the concept of failure analysis in data centers with reference to single point of failure and fault tolerance, Illustrate with suitable diagram.	**10**	**(3:4:3.5.6)**
		(OR)		
8.	**a.**	What you mean by Information Availability (IA)? Explain measuring information availability with respect to MTBF and MTTR.	**10**	**(3:4:3.6.1)**

Note: (**RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI - Performance Indicator**)

b.	What is backup and recovery? Explain different backup purposes and backup considerations.	**10**	**(3:4:2.6.5)**

MODULE – 5

9.	**a.**	With a neat diagram, explain the concepts of synchronous, asynchronous, and disk-buffered remote replication in storage systems.	**10**	**(3:5:3.6.2)**
	b.	Describe restore and restart considerations for local replicas.	**05**	**(2:5:3.6.3)**
	c.	Discuss uses of local replication in data protection in detail.	**05**	**(2:5:2.8.4)**

(OR)

10.	**a.**	Discuss components of the information storage security framework in-detail.	**06**	**(2:5:5.4.1)**
	b.	Explain the CHAP protocol used in IPSAN for secure communication.	**08**	**(3:5:5.4.2)**
	c.	Discuss the storage risk triad.	**06**	**(2:5:5.4.2)**

** ** **