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MANGALOREINSTITUTEOFTECHNOLOGY&ENGINEERING

(A Unit of Rajalaxmi Education Trust® ,Mangalore)
AutonomousInstituteaffiliatedtoVTU,Belagavi,ApprovedbyAICTE,NewDelhi Accredited by
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Model Question Paper

Seventh Semester BE Degree Examination

Cloud Computing

Time: 3 Hours (180 Minutes) **Max. Marks: 100**

Note: 1.Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L:RBT(Revised Bloom's Taxonomy)level, C:Course Outcome.

		Module - 1	M	L	C
Q1	a.	Describe the evolution of computing from centralized computing to parallel, distributed and cloud computing, highlighting the need for scalable computing.	10	L2	CO1
	b.	Compare Cluster, Grid and Peer-to-Peer (P2P) computing based on architecture, resource management, scalability and applications.	10	L2	CO1
		OR			
Q2	a.	Explain the evolution of High-Performance Computing (HPC) and High Throughput Computing (HTC), including their characteristics and applications.	10	L2	CO1
	b.	Illustrate the major enabling technologies for network-based systems, including IoT, Cyber-Physical Systems, memory, storage and wide-area networking.	10	L2	CO1
		Module - 2			
Q3	a.	Describe the mechanisms used for virtualization of CPU, memory and I/O devices.	10	L2	CO2
	b.	Multiple virtual machines (VMs) hosted on a physical server experience resource contention due to competing CPU, memory and I/O demands. Develop an appropriate resource-allocation strategy by incorporating suitable virtualization mechanisms to achieve efficient resource utilization, performance optimization and VM isolation.	10	L3	CO2
		OR			
Q4	a.	Describe the Xen architecture and describe the roles of its major components in virtual machine execution and management.	10	L2	CO2
	b.	A university plans to deploy applications with varying computational requirements on a virtual cluster. Design the cluster by selecting suitable VM configurations, computing resources and resource-management strategies.	10	L3	CO2
		Module - 3			
Q5	a.	Explain the cloud service models IaaS, PaaS and SaaS with suitable examples.	06	L2	CO1
	b.	Describe the architecture of a warehouse-scale data centre and discuss the role of networking and cooling system.	06	L2	CO3
	c.	A cloud application experiences fluctuating workload demand. Select a suitable provisioning strategy among demand-driven, event-driven and popularity-driven provisioning, and justify the selection with suitable	08	L3	CO4

		conditions.			
OR					
Q6	a.	Explain the layered architecture of cloud computing and discuss the responsibilities of IaaS, PaaS and SaaS layers.	06	L2	CO1
	b.	Describe the major computing, storage, database and application services provided by Google App Engine.	06	L2	CO3
	c.	An organization plans to migrate its existing applications to the cloud. Select suitable services from AWS, Azure or GAE based on computing, storage and database requirements. Justify the selection.	08	L3	CO4
Module - 4					
Q7	a.	Describe the major security concerns associated with cloud computing, such as data breaches, insider attacks, multi-tenancy, auditing, and compliance issues.	10	L2	CO3
	b.	Illustrate the cloud data encryption and decryption processes. Describe Homomorphic Encryption, Order-Preserving Encryption (OPE) and Searchable Symmetric Encryption (SSE)	10	L2	CO3
OR					
Q8	a.	Illustrate the concept and major steps of Privacy Impact Assessment (PIA). Describe the Fair Information Practices used to protect personal information in cloud computing.	10	L2	CO3
	b.	Illustrate the Xoar architecture and its approach to breaking the monolithic Trusted Computing Base (TCB). Discuss component isolation, least privilege, secure auditing and component restarting.	10	L2	CO3
Module - 5					
Q9	a.	Illustrate the capabilities of Cloud and Grid platforms with respect to data management, database support, and runtime environments.	06	L2	CO4
	b.	Explain the MapReduce programming model and illustrate with a suitable example.	06	L2	CO4
	c.	An organization needs to process large datasets across distributed computing nodes. Develop a MapReduce solution by identifying suitable Map and Reduce operations and demonstrating the execution using an appropriate example.	08	L3	CO4
OR					
Q10	a.	Illustrate the working of Twister and Iterative MapReduce. Discuss their features and applications in iterative distributed computing.	06	L2	CO4
	b.	Explain the architecture and working of Google File System (GFS), highlighting the roles of Master Server, Chunk Servers and Client.	06	L2	CO4
	c.	A distributed application requires repeated execution of data-intensive computations. Select a suitable programming framework among Hadoop MapReduce, Twister and Dryad based on its execution requirements. Justify the selection.	08	L3	CO4

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