

Roll No:

BTECH

(SEM VII) THEORY EXAMINATION 2024-25

CLOUD COMPUTING

TIME: 3 HRS

M.MARKS: 100

Note: Attempt all Sections. In case of any missing data; choose suitably.

	SECTION A		
l.	Attempt all questions in brief.	2 x	10 = 20
Q no.	Question	CO	Level
a.	Define cloud computing and trace its evolution.	1	K3
b.	Critically evaluate the challenges faced during the evolution of cloud computing.	1	K ₃
с.	Explain virtualization.	2	K3, K4
1.	Compare implementation levels of virtualization.	2	K3, K4
e.	Describe the features and benefits of IaaS, PaaS, and SaaS.	3	K2, K3
f.	Explain Storage-as-a-Service.	3	K2, K3
g.	Discuss Identity and Access Management (IAM) in cloud environments.	4	K2, K4
h.	Discuss encryption techniques for securing cloud resources.	4	K2, K4
i.	Describe cloud federation.	5	K3, K6
j.	Evaluate the role of federated services and applications.	5	K3, K6

SECTION B

2.	Attempt any <i>three</i> of the following:	10 x	x = 3 = 20
Q no.	Question	СО	Level
a.	Analyze the underlying principles of parallel computing in cloud	1	K 3
	environments. Derive equations for workload balancing in a distributed		
	cloud environment handling 10,000 tasks.		
b.	Discuss Service-Oriented Architecture and its relevance in cloud	2	K3,
	computing. Analyze its impact on application scalability.		K4
c.	Discuss architectural design challenges in cloud environments. Analyze	3	K2,
	the trade-offs between performance and security with numerical		K3
	examples.		
d.	Discuss inter-cloud resource management strategies. Simulate a	4	K2,
	scenario where multiple clouds collaborate to share resources during a		K4
	high-demand period.		
e.	Analyze the role of cloud technologies in disaster recovery. Simulate a	5	K3,
	recovery process for a critical application and compute the associated		K ₆
	downtime costs.		

A.



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SECTION C

Attempt any one part of the following: $10 \ge 1 = 10$ 3. CO Question Q no. Level Compare traditional IT resource provisioning with cloud-based **K**3 a. 1 provisioning. Provide a cost analysis model for a small business migrating to the cloud. Evaluate the importance of elasticity in cloud computing. Provide a b. K3 1 numerical model illustrating elasticity when user traffic scales from 10,000 to 1 million users in a video streaming service.

4.	Attempt any <i>one</i> part of the following:	10 x	x 1 = 10	
Q no.	Question	CO	Level	
a.	Explain disaster recovery mechanisms enabled by virtualization.	2	K3,	
	Simulate a recovery scenario for a financial system and calculate the		K4	
	time required to restore services.			G
b.	Describe the Publish-Subscribe model and its implementation in real-	2	K3,	70
	time systems. Simulate its use in a stock trading application and		K4	0
	compute latency for 1 million events.			64
			· 8.	
5	Attempt any <i>one</i> part of the following.	- 10 v	1 = 10	

5.	Attempt any one part of the following:	10 x	i 1 ≠ 10
Q no.	Question	CO	Level
a.	Compare public, private, and hybrid cloud models. Conduct a cost	3	K2,
	analysis for a company transitioning to a hybrid model.		K3
b.	Describe layered cloud architecture design. Analyze its implementation	3	K _{2,}
	in an online education platform.		K3

6. Attempt any *one* part of the following:

6.	Attempt any <i>one</i> part of the following:	10 x	1 = 10
Q no.	Question	CO	Level
a.	Evaluate security challenges in cloud computing. Analyze a case study	4	K2,
	involving a data breach in a SaaS platform.		K4
b.	Analyze the global exchange of cloud resources. Propose a model to	4	K _{2,}
	optimize resource allocation and compute the efficiency improvement.		K4

7. Attempt any <i>one</i> part of the following:		$10 \ge 1 = 10$	
Q no.	Question	CO	Level
a.	Discuss the programming environment of Google App Engine. Simulate	5	Кз,
	the deployment of a web application scaling to 100,000 daily users.		K6
b.	Explain the Hadoop MapReduce framework. Calculate the processing	5	K3,
	time for a 1 TB dataset with specified Map and Reduce tasks.		K ₆