PAPER ID-310232

Subject Code: KCS713

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

1. Attempt *all* questions in brief. **2 x 10 = 20**

Q no.	Question	CO	Level
a.	Define cloud computing and trace its evolution.	1	K_3
b.	Critically evaluate the challenges faced during the evolution of cloud computing.	1	K_3
c.	Explain virtualization.	2	K_3, K_4
d.	Compare implementation levels of virtualization.	2	K_3, K_4
e.	Describe the features and benefits of IaaS, PaaS, and SaaS.	3	K_2, K_3
f.	Explain Storage-as-a-Service.	3	K_2, K_3
g.	Discuss Identity and Access Management (IAM) in cloud environments.	4	K_2, K_4
h.	Discuss encryption techniques for securing cloud resources.	4	K_2, K_4
i.	Describe cloud federation.	5	K_3, K_6
j.	Evaluate the role of federated services and applications.	5	K_3, K_6

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 20**

Q no.	Question	CO	Level
a.	Analyze the underlying principles of parallel computing in cloud environments. Derive equations for workload balancing in a distributed cloud environment handling 10,000 tasks.	1	K_3
b.	Discuss Service-Oriented Architecture and its relevance in cloud computing. Analyze its impact on application scalability.	2	K_3, K_4
c.	Discuss architectural design challenges in cloud environments. Analyze the trade-offs between performance and security with numerical examples.	3	K_2, K_3
d.	Discuss inter-cloud resource management strategies. Simulate a scenario where multiple clouds collaborate to share resources during a high-demand period.	4	K_2, K_4
e.	Analyze the role of cloud technologies in disaster recovery. Simulate a recovery process for a critical application and compute the associated downtime costs.	5	K_3, K_6

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SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

Q no.	Question	CO	Level
a.	Compare traditional IT resource provisioning with cloud-based provisioning. Provide a cost analysis model for a small business migrating to the cloud.	1	K3
b.	Evaluate the importance of elasticity in cloud computing. Provide a numerical model illustrating elasticity when user traffic scales from 10,000 to 1 million users in a video streaming service.	1	K3

4. Attempt any *one* part of the following: **10 x 1 = 10**

Q no.	Question	CO	Level
a.	Explain disaster recovery mechanisms enabled by virtualization. Simulate a recovery scenario for a financial system and calculate the time required to restore services.	2	K3, K4
b.	Describe the Publish-Subscribe model and its implementation in real-time systems. Simulate its use in a stock trading application and compute latency for 1 million events.	2	K3, K4

5. Attempt any *one* part of the following: **10 x 1 = 10**

Q no.	Question	CO	Level
a.	Compare public, private, and hybrid cloud models. Conduct a cost analysis for a company transitioning to a hybrid model.	3	K2, K3
b.	Describe layered cloud architecture design. Analyze its implementation in an online education platform.	3	K2, K3

6. Attempt any *one* part of the following: **10 x 1 = 10**

Q no.	Question	CO	Level
a.	Evaluate security challenges in cloud computing. Analyze a case study involving a data breach in a SaaS platform.	4	K2, K4
b.	Analyze the global exchange of cloud resources. Propose a model to optimize resource allocation and compute the efficiency improvement.	4	K2, K4

7. Attempt any *one* part of the following: **10 x 1 = 10**

Q no.	Question	CO	Level
a.	Discuss the programming environment of Google App Engine. Simulate the deployment of a web application scaling to 100,000 daily users.	5	K3, K6
b.	Explain the Hadoop MapReduce framework. Calculate the processing time for a 1 TB dataset with specified Map and Reduce tasks.	5	K3, K6

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