Code No: **R204105A** **R20** **Set No. 1**

**IV B.Tech I Semester Regular Examinations, January – 2024**

**CLOUD COMPUTING**

**(Common to Computer Science & Engineering and Information Technology)**

**Time: 3 hours** **Max. Marks: 70**

***Answer any FIVE Questions***
***ONE Question from Each unit***
***All Questions Carry Equal Marks***

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**UNIT I**

1 a) Explain how the scalable computing over the internet improve fault tolerance and reliability in cloud computing. [7]

b) What is network function virtualization (NFV) and how does it enhance network-based systems in cloud computing? [7]

(OR)

2 a) What are the main security challenges in cloud computing and how do they impact energy efficiency? Explain. [7]

b) Compare and contrast between centralized, decentralized and distributed system models. [7]

**UNIT II**

3 a) State and explain different implementation levels of virtualization in cloud computing. [7]

b) List and explain some emerging virtualization mechanisms or tools that are shaping the future of virtualization in the cloud. [7]

(OR)

4 a) What is a virtual cluster and how does it differ from a physical cluster in cloud computing? Explain. [7]

b) Describe in detail about the concept of virtualization for data-centre automation. [7]

**UNIT III**

5 a) What are the different service models in cloud computing, and how do they differ from each other? Explain. [7]

b) How do public cloud platforms support different programming languages and development frameworks? [7]

(OR)

6 a) What programming languages are supported by Amazon AWS and Microsoft Azure? Explain. [7]

b) Exaplain Service-Oriented Architecture (SOA) and how does it differ from traditional software architectures? [7]

**UNIT IV**

7 a) How do cloud providers handle resource allocation and scaling to meet customer demands? [7]

b) Illustrate the concept of how can control theory account for varying workload demands and prioritize tasks accordingly in a cloud environment? [7]

(OR)

8 a) Describe how stability plays a role in the effectiveness of two-level resource allocation architecture. [7]

b) With the help of an example explain the start time fair queuing scheduling algorithm in cloud computing. [7]

**UNIT V**

9 Explain the concept and advantages of hierarchical storage management (HSM) in cloud storage models. [14]

(OR)

10 a) What are the challenges and considerations for data consistency in distributed file systems in the cloud? Explain. [7]

b) Write a short note on Google File system. [7]

Code No: **R204105A** **R20** **Set No. 2**

**IV B.Tech I Semester Regular Examinations, January – 2024**

# CLOUD COMPUTING

**(Common to Computer Science & Engineering and Information Technology)**

**Time: 3 hours** **Max. Marks: 70**

***Answer any FIVE Questions***
***ONE Question from Each unit***
***All Questions Carry Equal Marks***

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## UNIT I

1 a) List and explain the benefits of scalable computing over the internet. [7]
b) What are the key technologies used in network-based systems? Explain. [7]

(OR)

2 a) How can energy-efficient practices be implemented in cloud computing without compromising security? [7]
b) What are the characteristics and advantages of peer-to-peer (P2P) system model? Explain. [7]

## UNIT II

3 a) How does full virtualization differ from paravirtualization in terms of cloud implementation? [7]
b) Explain how application virtualization enables the deployment of applications across multiple operating systems and devices in the cloud? List some popular application virtualization tools. [7]

(OR)

4 a) Discuss the different types of virtualization structures commonly used in cloud computing. [7]
b) How does resource scheduling and allocation work in virtual clusters? What are some popular resource management tools used in cloud environments? [7]

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**UNIT III**

5 a) What is Infrastructure as a Service (IaaS)? Explain some examples of IaaS providers. [7]

b) What are the networking options and capabilities provided by public cloud platforms for efficient data transfer and communication? Explain [7]

(OR)

6 a) Are there any specific SDKs or development tools recommended for programming on Amazon AWS and Microsoft Azure? Give explanation. [7]

b) List and explain the key principles and components of Service-Oriented Architecture. [7]

**UNIT IV**

7 a) Explain some common mechanisms for monitoring and managing resource utilization in a cloud environment. [7]

b) Write some common control algorithms and techniques used in task scheduling on a cloud platform. [7]

(OR)

8 a) What factors contribute to the stability of two-level resource allocation architecture? Explain. [7]

b) With the help of an example explain the fair queue scheduling algorithm in cloud computing. [7]

**UNIT V**

9 a) What are the key features and benefits of using block storage in cloud storage models? Explain. [7]

b) Briefly Explain about Distributed File systems. [7]

(OR)

10 Compare and contrast different distributed file systems commonly used in the cloud, such as Hadoop Distributed File System (HDFS) and Google File System (GFS)? [14]

Code No: **R204105A** **R20** **Set No. 3**

**IV B.Tech I Semester Regular Examinations, January – 2024**

**CLOUD COMPUTING**

**(Common to Computer Science & Engineering and Information Technology)**

**Time: 3 hours** **Max. Marks: 70**

***Answer any FIVE Questions***
***ONE Question from Each unit***
***All Questions Carry Equal Marks***

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**UNIT I**

1 a) What are load balancing algorithms? Explain how do they help in handling increased demand? [7]

b) How does network monitoring and management contribute to the efficiency of network-based systems? [7]

(OR)

2 a) How do energy-efficient data centres contribute to improving security in cloud computing? [7]

b) Explain in detail about client-server model and its role in distributed computing. [7]

**UNIT II**

3 a) List down the benefits and drawbacks of hardware-assisted virtualization in cloud environments. [7]

b) List out the key differences between hardware-based virtualization and software-based virtualization, and how are they implemented in cloud computing? [7]

(OR)

4 a) What is the role of containerization in virtualization and what are some popular containerization tools used in cloud environments? [7]

b) Explain some key considerations for designing and deploying virtual clusters in cloud computing. [7]

**UNIT III**

5 a) How does Platform as a Service (PaaS) enable developers to build and deploy applications in the cloud? [7]

b) What are the security measures and compliance certifications offered by public cloud platforms to safeguard data? [7]

(OR)

6 a) Explain some common troubleshooting techniques and resources for debugging and resolving issues in programming on Amazon AWS and Microsoft Azure. [7]

b) How does Service-Oriented Architecture enable interoperability and integration between different systems and technologies? [7]

**UNIT IV**

7 a) Discuss some best practices for optimizing resource allocation and cost efficiency in the cloud. [7]

b) State and explain the benefits of applying control theory to task scheduling in terms of scalability, reliability and responsiveness. [7]

(OR)

8 a) Explain the key challenges in maintaining stability in two-level resource allocation architecture. [7]

b) Explain the mechanisms or protocols can be used to enable effective coordination among specialized autonomic performance managers. [7]

**UNIT V**

9 Discuss in detail the different storage models commonly used in cloud computing. [14]

(OR)

10 a) How do distributed file systems handle large-scale data processing and analytics in the cloud? [7]

b) Explain the architecture of GFS. [7]

Code No: **R204105A** **R20** **Set No. 4**

**IV B.Tech I Semester Regular Examinations, January – 2024**

**CLOUD COMPUTING**

**(Common to Computer Science & Engineering and Information Technology)**

**Time: 3 hours** **Max. Marks: 70**

***Answer any FIVE Questions***
***ONE Question from Each unit***
***All Questions Carry Equal Marks***

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**UNIT - I**

1 a) List and explain the examples of application that can benefit from scalable computing over the internet. [7]

b) Explain the various challenges and considerations when implementing network-based systems. [7]

(OR)

2 a) What are the best practices for securing virtual machines and containers in a cloud environment while maintaining energy efficiency? [7]

b) How does the MapReduce model facilitate distributed processing of large datasets? [7]

**UNIT - II**

3 a) How does application-level virtualization impact the scalability and flexibility of cloud-based applications? [7]

b) What is the concept of storage virtualization, and how does it facilitate data management in cloud environments? Are there any specific tools used for storage virtualization? [7]

(OR)

4 a) Explain the benefits and features of serverless computing in the context of virtualization in the cloud. [7]

b) List and explain the advantages of utilizing virtual clusters for resource management in the cloud. [7]

**UNIT - III**

5 a) What are the benefits and considerations of using Software as a Service (SaaS) for enterprise applications? Explain with a use case. [7]

b) Describe the process of handling authentication and access control when developing applications on Amazon AWS and Microsoft Azure. [7]

(OR)

Code No: **R204105A** **R20** **Set No. 4**

| | | | |
|---|---|---|---|
| 6 | a) | Describe the key features and services offered by popular public cloud platforms like AWS, Azure, and Google Cloud. | [7] |
| | b) | How do public cloud platforms handle scalability and high availability of applications and services? | [7] |

**UNIT - IV**

| | | | |
|---|---|---|---|
| 7 | a) | How do cloud providers support customization and fine-grained control over resource allocation policies? Explain | [7] |
| | b) | Explain how control theory enables dynamic adaptation and real-time decision making in task scheduling on a cloud platform. | [7] |

(OR)

| | | | |
|---|---|---|---|
| 8 | a) | How can feedback control mechanisms be utilized to ensure stability in a two-level resource allocation architect? | [7] |
| | b) | How does the coordination of specialized autonomic performance managers contribute to efficient resource management in the cloud? | [7] |

**UNIT - V**

| | | | |
|---|---|---|---|
| 9 | a) | How does the storage-as-a-service (STaaS) model function in cloud storage systems? Explain. | [7] |
| | b) | Explain about Distributed and parallel file systems. | [7] |

(OR)

| | | | |
|---|---|---|---|
| 10 | a) | Explain the concept of data partitioning and distribution in distributed file systems. | [7] |
| | b) | With a neat diagram, explain GFS architecture. | [7] |