Code No: **R164105D** **R16** **Set No. 1**

IV B.Tech I Semester Regular Examinations, October/November - 2019

CLOUD COMPUTING

(Common to Computer Science and Engineering and Information Technology)

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

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
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PART–A *(14 Marks)*

1. a) Define High-Throughput Computing. [2]
   b) Explain Hardware Abstraction Level Virtualization. [2]
   c) Explain about Centralized versus Distributed Computing. [3]
   d) Explain about Gang scheduling. [2]
   e) Explain about Admission control wrt Cloud resource management. [3]
   f) Explain about Amazon simple storage service. [2]

PART–B *(4x14 = 56 Marks)*

2. a) Explain about Degrees of Parallelism. [7]
   b) Explain the Layered architecture for web services and the grids. [7]

3. Explain the differences between hypervisor and para-virtualization and give one example VMM (virtual machine monitor), that was built in each of the two categories. [14]

4. a) Explain Layered architectural development of the cloud platform for IaaS, PaaS, and SaaS applications over the Internet. [10]
   b) Explain the design objectives for cloud computing. [4]

5. a) Describe Important Cloud Platform Capabilities. [7]
   b) What is Google App Engine? Which type of cloud service the Google App Engine provides? Explain. [7]

6. a) Explain the basic mechanisms for the implementation of resource management policies. [7]
   b) Give the Formal Definition of Map Reduce with an example. [7]

7. a) Analyze the advantages of memory-based check pointing. [7]
   b) Give a comparison of several network file systems. [7]

Code No: **R164105D** **R16** **Set No. 2**

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

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
*****

PART–A *(14 Marks)*

1. a) Explain about High-Performance Computing. [2]
   b) Explain ISA level Virtualization. [2]
   c) Explain about Hybrid Clouds. [3]
   d) Explain about Scalable synchronization. [2]
   e) Explain about Load balancing wrt Cloud resource management. [2]
   f) Draw the architecture of Google file system. [3]

PART–B *(4x14 = 56 Marks)*

2. a) Give the Applications of High-Performance and High-Throughput Systems. [7]
   b) Explain the Critical Cluster Design Issues and Feasible Implementations. [7]

3. a) With a diagram explain the architecture of a computer system before and after virtualization. [7]
   b) List Relative Merits of Virtualization at Various Levels. [7]

4. a) Explain the Cloud ecosystem for building private clouds. [7]
   b) Explain Cloud-Enabling Technologies in Hardware, Software, and Networking in tabular format. [7]

5. a) List the Traditional Features in Cluster, Grid, and Parallel Computing Environments. [7]
   b) Explain the techniques theta are related to security, privacy, and availability requirements for developing a healthy and dependable cloud programming environment. [7]

6. Explain a Model Capturing Both QoS and Energy Consumption for a Single-Server System. [14]

7. a) Analyze the advantages of memory-based check pointing. [7]
   b) Explain about the BigTable data model and key components of its system structure. [7]

Code No: **R164105D** **R16** **Set No. 3**

IV B.Tech I Semester Regular Examinations, October/November - 2019

CLOUD COMPUTING

(Common to Computer Science and Engineering and Information Technology)

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

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
*****

PART–A *(14 Marks)*

1. a) Explain about Parallel computing. [2]
   b) Explain Operating System Level Virtualization. [2]
   c) Explain about Cloud Platform Design Goals. [2]
   d) Give Formal Notation of MapReduce Data Flow. [2]
   e) Explain about Capacity allocation wrt Cloud resource management. [3]
   f) Explain about Sprite Network File System (SFS). [3]

PART–B *(4x14 = 56 Marks)*

2. a) Explain the vision of computer utilities in modern distributed computing systems. [7]
   b) Explain about VM multiplexing, suspension, provision, and migration in a distributed computing environment [7]

3. a) Explain Live migration process of a VM from one host to another. [7]
   b) Explain about the Host-Based Virtualization. [7]

4. a) Explain about a security-aware cloud platform built with a virtual cluster of VMs, storage, and networking resources over the data-center servers operated by providers. [7]
   b) Explain the properties of Service Oriented Architecture. [7]

5. a) Explain Platform Features Supported by Clouds and (Sometimes) Grids. [7]
   b) Explain programming features related to the program library, blobs, drives and DPFS. [7]

6. a) Explain a two-level control architecture where application controllers and cloud controllers work in concert. [7]
   b) Explain about Start-time fair queuing. [7]

7. a) Block virtualization simplifies the storage management tasks in SANs. Provide solid arguments in support of this statement. [7]
   b) Draw the architecture of Google file system and also explain the data mutation sequence in Google file system. [7]

Code No: **R164105D** **R16** **Set No. 4**

IV B.Tech I Semester Regular Examinations, October/November - 2019

CLOUD COMPUTING

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

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
*****

PART–A *(14 Marks)*

1. a) Explain about Cloud computing. [2]
   b) Explain the for OS-Level Virtualization. [2]
   c) Explain Software as a Service (SaaS). [2]
   d) Explain about Workflow and data query language support. [2]
   e) Explain about Energy optimization wrt Cloud resource management. [3]
   f) Explain about *Advisory locks and Mandatory locks.* [3]

PART–B *(4x14 = 56 Marks)*

2. a) Explain the design objectives of HPC and HTC. [7]
   b) Explain the use of a GPU along with a CPU for massively parallel execution in hundreds or thousands of processing cores. [7]

3. a) Explain the advantages of virtualized data center over a classic data center. [7]
   b) Explain Basic concept of the vCUDA architecture. [7]

4. a) Explain the IaaS, PaaS, and SaaS cloud service models at different service levels. [7]
   b) Explain Google App Engine platform for PaaS operations. [7]

5. a) Give the Comparison of MapReduce Type Systems. [7]
   b) Explain the system issues for running a typical parallel program in either a parallel or a distributed manner. [7]

6. a) Explain a utility-based model for cloud-based Web services. [7]
   b) Explain the two level architecture for scalable resource allocation in cloud computing. [7]

7. a) Analyze the reasons for the introduction of storage area networks (SANs) and their properties. [7]
   b) Explain the architecture of a GFS cluster. [7]