

Section B

Attempt all questions.

All Questions carry equal marks

50 Marks

Question One (12.5 Marks)

*****9) A. What are the advantages of using cloud computing?**

Ans:

- i. Data backup and storage of data
- ii. Powerful server capabilities
- iii. SaaS (Software as a Service)
- iv. Information technology sandboxing capabilities
- v. Increase in productivity
- vi. Cost effective & Time saving

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- vii. Time-saving: It helps in saving time in terms of deployment and maintenance.
 - viii. Cost-saving: It works in investment in the corporate sector.
 - ix. Scalable and Robust: It performs in such a way to make the application scalable and robust. Earlier, scaling took lots of time, but now, scaling takes less time.

B. Explain the different models for deployment in cloud computing?

Ans:

- Public cloud as a —cloud made available in a pay-as-you-go manner to the public and private cloud as —internal data center of a business or other organization, not made available to the general public.
- Establishing a private cloud means restructuring an existing infrastructure by adding virtualization and cloud-like interfaces. This allows users to interact with the local data center while experiencing the same advantages of public clouds, most notably self-service interface, privileged access to virtual servers, and per-usage metering and billing.
- A community cloud is —shared by several organizations and a specific community that has shared concerns (e.g., mission, security requirements, policy, and compliance considerations).

- A hybrid cloud takes shape when a private cloud is supplemented with computing capacity from public clouds. The approach of temporarily renting capacity to handle spikes in load is known as cloud-bursting.
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Public Cloud: The set of hardware, networking, storage, services, applications, and interfaces owned and operated by a third party for use by other companies or individuals is the public cloud. These commercial providers create a highly scalable data center that hides the details of the underlying infrastructure from the consumer. Public clouds are viable because they offer many options for computing, storage, and a rich set of other services.

Private Cloud: The set of hardware, networking, storage, services, applications, and interfaces owned and operated by an organization for the use of its employees, partners, or customers is the private cloud. This can be created and managed by a third party for the exclusive use of one enterprise. The private cloud is a highly controlled environment not open for public consumption. Thus, it sits behind a firewall.

Hybrid Cloud: Most companies use a combination of private computing resources and public services, called the hybrid cloud environment.

Multi-Cloud: Some companies, in addition, also use a variety of public cloud services to support the different developer and business units – called a multi-cloud environment

i) **IaaS:** These services contain the basic building blocks of the cloud. They provide access to computers—physical and virtual—and to network features and storage space. Think of IaaS like renting a kitchen. You can use all the different appliances (mixers, blenders, sinks), and you can rent a kitchen with better appliances if you need them.

Examples: Amazon Elastic Compute Cloud (Amazon EC2), Rackspace, Google Compute Engine

ii) **PaaS:** These services are the tools needed to manage the underlying hardware and launch applications. They include programming environments, application testing platforms, and application launchers. Think of PaaS as going to a restaurant. You are not managing the appliances in the kitchen, but you can ask the waiter or chef to make things however you want.

Examples: AWS Elastic Beanstalk, Microsoft Azure, Google App Engine

iii) **SaaS:** These services are the actual apps and software provided over the internet. You are not responsible for managing or installing the software; you just access and use it. Think of SaaS as eating at an all-you-can-eat buffet. You have access to whatever food is being served. You don't control what is made or how, but you can use as much as you want.

Examples: Dropbox, Slack, Spotify, YouTube, Microsoft Office 365, Gmail.

*****10) C. State the platforms that are used for large-scale cloud computing?**

Ans:

i) Apache Hadoop – It is an open-source platform written in Java. It creates a pool of computer with each file system. Then the data elements are clustered and similar hash algorithms are applied. Then copies of the existing files are created.

ii) Map Reduce – It is a software built by Google in order to support distributed computing. It uses a large set of data and various cloud resources and then distributes the data to several other computers known as clusters. Map Reduce can deal with both structured and unstructured data.

Question TWO (12.5 Marks)

*****8) A. What is the difference between cloud computing and computing for mobile?**

Ans:

Mobile computing uses the same concept as cloud computing. Cloud computing becomes active with the data with the help of internet rather than individual device. It provides users with the data which they must retrieve on demand. In mobile, the applications run on the remote server and gives user the access for storage and manage.

An emerging picture of the difference between cloud computing and mobile computing involves the emergence of smart phone and tablet operating systems and, on the cloud end, new networking services that may serve these and other devices.

*****7) B. What are the security aspects provided with cloud computing?**

Ans:

i) Identity Management – Authorizes application services

ii) Access Control – Controls the access of users entering the cloud environment

iii) Authentication & Authorization – Allows only authorized and authenticated users to access the data and applications.

C. List out the different layers which define cloud architecture?

Ans:

There are 5 layers of cloud architecture-

- i) CC- Cluster Controller
- ii)SC- Storage Controller
- iii)CLC- Cloud Controller
- iv)NC- Node Controller
- v)Walrus

Question Three (12.5 Marks)

*****6) A. what is the requirement of a virtualization platforms in implementing the cloud?**

Ans:

A virtualization platform helps to –

- i) Decouple hardware from software
- ii) Manage service level policies and cloud operating system
- iii) Deploys cloud computing models like SaaS, PaaS, and IaaS

B. Before going for a cloud computing platform what are the essential things to be taken by users?

Ans:

- i)Compliance
- ii)Loss of data
- iii)Data storage
- iv)Business continuity
- v) Uptime
- vi)Data integrity in cloud computing

*****5) C. State five (5) open-source cloud computing platform databases?**

Ans:

- i) MongoDB – It is a schema-free and document-oriented database. It is written in C++ and provides high storage space.
- ii) CouchDB – A database system based on the Apache server. It is used in data storage.
- iii) Lucid DB – It is a Java/C++ database for data warehousing.
- iv) MySQL. The most popular open-source database, MySQL has been around for more than 30 years. ...
- v) PostgreSQL. PostgreSQL has also been around for a long time, but not as long as MySQL. ...
- vi) NuoDB. ...
- vii) MariaDB. ...
- viii) Oracle Database XE. ...
- ix) MarkLogic. ...
- x) Azure SQL Database. ...
- xi) Google App Engine.

Question Four (12.5 Marks)

*****4) A. Mention the name of some large cloud providers and databases?**

Ans:

- i) SAP
- ii) EnterpriseDB
- iii) Garantia Data
- iv) Cloud SQL by Google
- vi) Azure by Microsoft
- vii) Rackspace
- viii) Google bigtable
- ix) Amazon simpleDB
- x) Cloud-based SQL
- xi) Amazon Web Services

****1) B. Explain the difference between cloud and traditional data centers?**

Ans:

The cost of the traditional data center is higher than earlier due to heating and hardware/software issues.

When the demand increases, Cloud automatically gets scaled. Most of the expenses are spent on maintaining the data centers, while that is not the case with cloud computing.

*****3) C. In cloud computing what are the different layers?**

Ans:

There are 3 layers in the hierarchy of cloud computing.

i) Infrastructure as a service (IaaS): It provides cloud infrastructure in terms of hardware as like memory, processor, speed etc.

ii) Platform as a service (PaaS): It provides cloud application platform for the developer.

iii) Software as a service (SaaS): It provides the cloud applications to users directly without installing anything on the system. These applications remain on cloud.

****2) D. State and briefly explain the three (3) main cloud computing deployment models?**

Ans:

i) Infrastructure as a Service (IaaS)

Infrastructure as a Service (IaaS) is a self-service model for managing remote data center infrastructures. IaaS provides virtualized computing resources over the Internet hosted by a third party such as Amazon Web Services, Microsoft Azure, or Google.

Instead of an organization purchasing hardware, companies purchase IaaS based on a consumption model. It is like buying electricity. You only pay for what you use. This model enables companies to add, delete or reconfigure IT infrastructure on-demand.

Many IT organizations rely on IaaS because they are more familiar with IaaS, especially if they have years of experience with virtual environments or strict security and regulatory requirements that can only be met through IaaS.

ii) Platform as a Service (PaaS)

Platform as a Service (PaaS) allows organizations to build, run and manage applications without the IT infrastructure. This makes it easier and faster to develop, test and deploy applications.

Developers can focus on writing code and create applications without worrying about time-consuming IT infrastructure activities such as provisioning servers, storage, and backup.

PaaS brings more value to cloud. It can reduce your management overhead and lower your costs. PaaS also makes it easier for you to innovate and scale your services on demand.

iii) Software as a Service (SaaS)

Software as a service (SaaS) replaces the traditional on-device software with software that is licensed on a subscription basis. It is centrally hosted in the cloud. A good example is Salesforce.com.

Most SaaS applications can be accessed directly from a web browser without any downloads or installations required. However, some SaaS applications require plugins.