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**Q1(a): Explain essential characteristics of cloud computing?**

**Ans:** The essential characteristics of cloud computing are as follow :

* The users can easily assign and reassigned resources which are

based on their requirements.

* The resources which are assigned can easily be distributed among multiple users.
* Can easily monitor and the assigned resources.
* Can access the assignged rersources through internet through multiple platforms.
* The resources which are assigned can easily released and extended automaticly.

**(b) Explain in detail the key properties of cloud computing.**

**Ans:** Cloud computing is a user friendly users have their access to there resources through internet .

It is goal oriented . the applications can be stored and users are authorized to it.

As the data is stored in the cloud so the users can acces the data which is not limited to one source.

It is intelligent with different type of data stored on it .

**Q2(a) Explain in detail different service models of cloud computing.**

**Ans:**

**Software as a service (SAAS)**

**Platform as a service(PAAS)**

**Infrastructure as a service(IAAS)**

**Software as a service(SAAS):** It is a service model which allows to use software applicaztions as a service to end users. It gives direct access to cloud based applications without installing any infrastructure.Can be used for free for limited time.SAAS doesnot require hardware which kept the rice low.signing up for the services t get acces to best and powerful computing resources which is quick process. E.g facebook etc.

**Platform as a service (PAAS):**

It is a cloud based service used for the development of different applications for business developed tested and organized .It simplifies the process of enterprised software development.PAAS provide large amount of space for developing and testing application in the run time environment.The storage , servers and networking are manageable by the company or by the platform provider.

**Infrastructure as a service(IAAS):**

User can get resources within the clouds which are necessary for the business and organizations. Can give any computing infrastructure like storage ,server, networking hardware and maintenanceIt is used by google compute engine and so on.

**Q2(b):Explain in detail different deployment models of c,oud computing.**

**Ans**: Public cloud are free for public use and it is not the secure model of cloud computing because everyone can easily use it.

Private cloud which use a group of people and not everyone is authorized to use so it is a secure.

Many organization have access to community cloud like health department is sharing their data to ther every office in the region.

The combination of private and public cloud computing is called hybrid cloud like online bussines which needs more resources during the off days so the maybe remain public rather they will go with private.

**Q3(a): Explain in detail roles and boundaries of cloud computing.**

**Ans:**The cloud provider is responsible for providing the allocated resources to the user as they are agreed on it.

To remove the confusion the user and provider have to sign an agrrement for their allocated resources .

Cloud service owner means the person who is ownig the cloud services individually and legally.

Cloud administrator the individual or organization whoa re responsible for making a cloud based on allocated resources.

The challenges are security privacy service quality downtime and accessibility and access the data.

**Q3(b): Explain in detail cloud risk and challenges.**

**Ans:The risk in cloud are :**

If ther server is down so there is a chance of a server to timeout and the developer may lose a customer.

If the storage get corrupted so there is a chance of losing the data.

If the server is not well secure dso ther is a chance of data loss and server may be get hacked.

There are some of challenges of cloud computing:

Requires constant internet connection means if there is any shortage the server might get disconnect.

Requires a high speed internet connection to not to get down the server

Challenging for the developer because ther are limited functions for the satisfaction of users.