

**Mid Semester Assignment (Spring - 2020)**  
**Cloud Computing**

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**BS(SE)**

**Section: "A"**

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**Note: Attempt all Questions. Answers should be in your own words. Plagiarism will not be tolerated, if detected, it will lead to failure.**

**Question No. 1: (10)**

a. Explain essential characteristics of cloud computing.

Ans): **On demand self service:** cloud computing can be monitor without human interaction from the service provider side. a manufacturing organization can provision additional computing resources as needed without going through the cloud service provider. For example storage space, virtual machine instances, and so on.

**Broad network access:** cloud computing resources are available over a network and can be accessed by any platform for example mobile, tablet , desktop etc.

in the case of a private clouds it could be a local area network (LAN).

**Resource pooling:** Resource pooling means that multiple customers are serviced from the same physical resources. Cloud provider resources must be strong and flexible to support multi customer services and their requirements.

**Rapid elasticity:** Cloud computing has the ability to provision the resources of the client as per customer requirement. Cloud resources changes when business demand changes for example cloud resources can be scaled up and down as per requirement.

**Measured services:** Cloud service is measured by the cloud provider and consumer pay accordingly to the services he consumed. Measured services use the simple model pay for what you use.

b. Explain in detail the key properties of cloud computing.

Ans): **User centric:** cloud computer is user centric if user store their documents, photos etc he can access that data from anywhere with any device with internet connection and he can also share his data with anyone.

**Task centric:** cloud computer focus on what user need and how can a application can perform that task for the user.

**Powerful:** cloud computer is powerful in the sense of computational power and storage.

**Accessible:** we can access cloud from any device and can retrieve more information because we are not limited to one source of data.

**Intelligent:** There is a lot of data stored in the cloud we need a intelligent way to access that data so cloud access that data through data mining and other analysis methods.

**Programmable:** we can program cloud computer if one computer goes offline we can program cloud computer to connect to the other one. For example backup data from the other computer when current computer crashes.

### Question No. 2: (10)

a. Explain in detail different service models of cloud computing.

Ans): There are different service model in cloud computing that are given below:

**1: Software as a service (SaaS):**

SaaS give us a quick access to cloud base web application and we can use them on a browser no installation required for this type of applications we can easily access them by a browser. For example: Dropbox

**2: Platform as a service (PaaS):**

In this service model users can develop their application on cloud, cloud Will provide development environment and testing environment for the user PaaS give space for developing and testing applications. For example Windows Azure

**3: infrastructure as a service (IaaS):** IaaS is virtual provision of computing resources on a cloud. IaaS can give different types of infrastructure for example servers , storage and their maintenance. For example amazon web services

b. Explain in detail different deployment models of cloud computing.

**1: Public cloud:**

As we can see in the name this type of cloud are available for the public and anyone can store and create their data and their data will be store on third party server in public cloud there is security issues. example IBM blue cloud

**2: private cloud:**

Private cloud is not available to the general public it is for a specific organization and only that organization can use the services of the cloud private cloud is used by a specific organization there less security issue than public cloud.

### **3: Community cloud:**

In private cloud only one organization can use the cloud services while in community cloud different organization with similar background work shares the infrastructure and related resources on the cloud. Community cloud is secure and flexible.

**4: Hybrid cloud:** Hybrid cloud is the mixture of the above mention deployment models. It depends on the company they observe there requirements and create a hybrid cloud which matches their need. Hybrid cloud is also secure and flexible.

### **Question No. 3: (10)**

a. Explain in detail roles and boundaries in cloud.

Ans):**1: Roles in cloud:**

**a): Cloud provider:** The organization which provides IT resources related to cloud is called cloud provider. The cloud provider will provider cloud services to the consumer as per the SLA agreement further task of the cloud provider is to make cloud services available to the organization at any time without any issues.

**b): Cloud consumer:** Cloud consumer is organization or a single person that has agreement with cloud provider to use their IT resources.

**c): Cloud service owner:** The person or an organization that owns legally cloud services is called cloud service owner. Cloud service owner can be a cloud consumer or the cloud provider.

**d): Cloud resource administration:** The person or the organization which is responsible for administrating the cloud base IT resources is called cloud resource administration. The cloud resource administration can be the cloud consumer or the cloud provider within which the cloud service reside.

### **2: Boundary in cloud:**

**a): Organizational boundary:** Organizational boundary is the physical parameter of the organization that surrounds a set of IT resources that is owned by the organization. Organizational boundary represents the IT assets and IT resources.

**b): Trust Boundary:** Trust boundary is the logical parameter it span beyond the physical parameter to represent which IT resource we can trust. Trust boundary is associated with the trust of the organization acting as cloud consumer.

b. Explain in detail cloud risk and challenges.

Ans): **Risks and challenges of cloud:**

**1): Cloud migration:** Cloud migration is the process of moving data or application of the organization to the cloud infrastructure or moving data within the cloud to different cloud setup. So moving data of the organization from its existing PC's or servers to the cloud is quit a big challenge.

**2):Lack of expertise:** Cloud technology is changing day by day and new tools is introducing to cloud market so to keep up with changes and new tools that needs expertise which is difficult to manage for the cloud service provider.

**3): Bandwidth cost:** Organizations can save money on hardware moving to cloud but it can cost more in the sense of bandwidth to access their workloads smaller apps does not require more bandwidth so it is not a problem for the smaller organization but for the big organization which have a lot of data it can cost way more.

**4): Security issues:** Nowadays many breaches happens on data centers which makes our data in the cloud vulnerable the data may be sensitive so managing the security aspects of the cloud is a big challenge for the cloud service provider.

**5): Service quality:** Service quality is also a big challenge in cloud computing many organization fears to moving their data to cloud because they think their data will be not secure and vulnerable to others the other factors are also availability , performance and

scalability although cloud provider gives refund to organization when the service is down.  
Without proper service quality the enterprise will not move its business to the cloud.