Q1)

1. shared resources in these applications are:

1) Memory

2) Storage

3) Computing

(4) Resources for networking

Memory is responsible for storing and executing data and instructions, whereas storage is utilized to storing and retrieving information. Computing resources are utilized to handle instructions and data, while networking resources permit the client to communicate with the cloud service.

i) Speech recognition services is stateless because it keeps no state data on the client, including the client's Internet address, as well as the client does not have to retain any state data about the service. This signifies the service doesn't save client data or session metadata. This makes it lightweight and efficient, since it doesn't need state information.

ii) The stateless service hides server failures from mobile apps. Because service does not save state information, so mobile app is really not impacted by the server outage.

iii) This client-server solution is scalable, flexible, and cost-effective for certain applications. Cloud services are accessible and used on demand, allowing applications to adapt demand. This allows for easy scaling of resources as needed. The decoupled service allows for quick upgrades and maintenance. The clients can be updated without the service. The client isn't responsible for maintaining the service, thus it's cost-effective. The client just pays for the resources used, reducing costs.

Q2)

1. 1) Distributed computing allows firms to scale up or down to match workforce needs. This allows organizations to swiftly add remote workers and satisfy shifting demands.

2) Distributed computing secures employee access to corporate data and apps from home. This protects data and intellectual property while employees operate remotely.

1. 1) Latency is a problem for distributed computing and WFH. This is especially the case when employees try to access remote programs or data. Companies can reduce latency by using caching and other distributed computing solutions.

2. Data Synchronization: Distributed computing can make it harder to synchronize numerous systems. To solve this problem, firms might implement a distributed system that uses data replication and synchronization.

Q3)

a)

Cloud computing benefits:

1. A network of remote servers uses cloud computing to supply internet-based hardware and applications.

Flexibility and accountability improve quality control. It's mobile and accessible from any connected device.

1. It saves money and prevents loss because infrastructure and implementation modifications are minimal.

These remote servers store, manage, and process data needed to extend or modernize infrastructure.

b)

Risks of cloud computing:

1) Cloud computing usually saves enterprises money. A company can boost its cloud capacity without buying additional hardware.

As cloud-based services are on-demand and adaptable, amounts and prices are hard to predict.

2) The risk of a data breach cannot be completely ruled out.

It has trouble keeping the data private, even when it's the most important information.

c)

Putting your data on the servers of a third party, or "in the cloud," means doing it with their permission. In this context, "cloud computing" refers to a certain model of computing characterized by the on-demand, internet-based provisioning of computing resources on a cost basis. As a storage and networking mechanism, it is widely deployed.

A distributed system is one in which various parts are housed on various computers connected via a network and are able to coordinate their activities through the exchange of messages.

Q4)

a)

Access Transperency:

Access Transperency Feature enables the same procedures for local and remotely resources.

Location transparency:

Access to resources isn't restricted based on their network and physical due to location transparency.

In a system with good concurrency transparency, many processes can use the same resources at the same time without negatively affecting one another.

b)

Communication:

When viewed from the perspective of the runtime, a distributed system is comprised of software applications that talk to one another through IPC methods like HTTP. This action takes place on actual hardware.

Coordination:

From an operational point of view, a distributed system is a collection of services that may be independently deployed and scaled.