**Part 1:Overview of cloud computing**

Task2.1)**List at leastfive benefits of cloud computing over traditional on premises infrastructure**

* **Scalability**: to use it in large geographical area
* **High availability:** Expressed as percentage,it’s the ability of a system to respond to users
* **Elasticity**:the ability of system to automatically grow and shrink based on application demand
* **Disaster recovery**: the ability of a system to recover from failure within a period of time,and how much data is lost
* **Fault tolerance:**the ability of a system to handle faults like power,networking,or hardware failures
* **Agile:** the ability to change rapidly based on changes to market of environment
* **Economies of scale:** it’s cheaper for Microsoft to run a server than you can ever achieve yourself.
* Cost-effectiveness:
* Flexibility
* Accessibility
* Reliability
* Security
* Automation updates and maintenance

Task2.2)**Describe the capex and OpEx models of financing IT infrastructure, providing examples of when each model might be preferred.**

**CapEx-**

Capital Expenditure is money invested in assests that return investment over time.

Example- Purchasing servers, networking hardware, data center equipment, or software licenses outright

Preferred when:

* Long-term investment
* Control and customization
* Tax benefits

**OpEx**-

Operating Expenditure is money spent every day on operating expenses.

Example- cloud computing services(Aws,Azure), software as a service subscriptions, renting server space in colocation facility

Preferred when:

* Scalability and flexibility
* Predictable costs
* Rapid deployment

**Part 2: Understanding public,private and hybrid clouds**

**Task 3.1) create a brief report differentiating between public,private and hybrid clouds. Include a diagram that represents each cloud model.**

Public cloud- Computing services offered over the public internet,anyone can sign up

Private cloud – computing services offered to only select users,internal or corporate cloud

Hybrid cloud-combination of public and private clouds, scale private infrastructure to the cloud

A diagram of cloud computing

Description automatically generated

**Task 3.2)For each cloud model, list one real-world application or scenario where that model would be the most appropriate choice**

**Infrastructure as a Service (IaaS)**:

* + **Application**: **Big Data Analysis**
  + **Scenario**: Organizations dealing with large volumes of data can leverage IaaS to store and process data efficiently. Cloud providers offer scalable infrastructure,making it ideal for big data analytics

**Platform as a Service (PaaS)**:

* + **Application**: **Software Development and Testing**
  + **Scenario**: PaaS provides a development environment where developers can build, test, and deploy applications without worrying about underlying infrastructure. It’s perfect for rapid development cycles and collaborative software projects.

**Software as a Service (SaaS)**:

* + **Application**: **Customer-Facing Web Apps**
  + **Scenario**: SaaS allows users to access software applications over the internet. Business can use Saas for customer relationship management(CRM), email services, and collaboration tools,enhancing user experience and accessibility.