📘 Cloud Computing Unit–01

🚀 IMPORTANT QUESTIONS WITH EASY AND DETAILED ANSWERS RGPV Exam

Based on uploaded notes & PYQ-focused topics

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1. Cloud Computing Characteristics

Introduction

Cloud computing ek modern computing technology hai jisme resources jaise servers, storage, software aur networking internet ke through provide kiye jaate hain.

User ko physical hardware manage nahi karna padta.

Definition

Cloud computing characteristics are the special features that make cloud computing flexible, scalable and internet-based computing technology.

Why It Is Needed

Traditional systems me:

- high hardware cost
- maintenance problem

- limited storage
- low scalability

issues hote the.

Cloud computing in problems ko solve karta hai.

Easy Explanation

Cloud computing ko online computer system samjho.

Jaise Google Drive me files save hoti hain without pendrive.

Waise hi cloud me servers and applications internet ke through use hote hain.

Main Characteristics of Cloud Computing

Characteristic	Meaning
On-Demand Self Service	User khud services use kar sakta hai
Broad Network Access	Internet se anywhere access
Resource Pooling	Shared resources
Rapid Elasticity	Fast scaling
Measured Service	Pay-as-you-use model

Step-by-Step Working

1. User internet se request bhejta hai
2. Cloud provider resources allocate karta hai
3. Services user ko provide hoti hain
4. User usage ke according payment karta hai

Flow of Process

```
User → Internet → Cloud Provider → Resources
```

Diagram

```
Client
   ↓
Internet
   ↓
Cloud Services
  ├──── Storage
  ├──── Server
  ├──── Database
  └──── Applications
```

Real-Life Analogy

Cloud computing electricity board jaisa hai.

Hum khud electricity generate nahi karte.

Bas jitni use karte hain utna bill dete hain.

Advantages

- Low cost

- High scalability
- Remote access
- Automatic updates
- Data backup

Disadvantages

- Internet dependency
- Security concerns
- Downtime possible

Applications

- Google Drive
- AWS
- Microsoft Azure
- Online banking
- Netflix

Important Keywords

Scalability, Elasticity, Resource Pooling, On-Demand Service, Pay-as-you-use

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Conclusion

Cloud computing characteristics cloud ko flexible, cost-effective and scalable technology banati hain.

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2. Service Oriented Architecture (SOA)

Introduction

SOA ek software architecture hai jahan applications ko small services me divide kiya jata hai.

Definition

SOA is an architecture in which different software services communicate with each other through a network.

Why It Is Needed

Large applications ko manage karna difficult hota hai.

SOA modular and reusable services provide karta hai.

Easy Explanation

SOA me har service ek specific kaam karti hai.

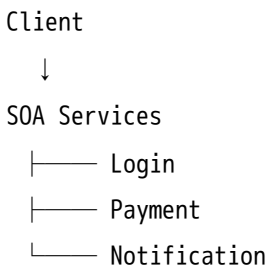
Example:

- login service
- payment service
- email service

Working / Steps

1. Client request bhejta hai
2. Service request receive karti hai
3. Processing hoti hai
4. Response user ko milta hai

Diagram



Advantages

- Reusability
- Easy maintenance
- Scalability
- Flexibility

Disadvantages

- Complex architecture
- Security issues
- Network dependency

Applications

- Banking systems
- E-commerce
- Cloud platforms

Important Keywords

Loose Coupling, Reusability, Services, Interoperability

Conclusion

SOA cloud computing ka important architecture model hai jo modular services provide karta hai.

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3. SOAP, WSDL and UDDI

Introduction

Ye tino web services ke important components hain.

SOAP

Definition

SOAP is an XML-based messaging protocol used for communication between web services.

SOAP Structure

```
SOAP Message
  ├──── Envelope
  ├──── Header
  ├──── Body
  └──── Fault
```

Advantages

- Secure
- Standardized
- Platform independent

WSDL

Definition

WSDL is an XML-based language used to describe web services.

Easy Explanation

WSDL service ka instruction manual hota hai.

UDDI

Definition

UDDI is a directory used to register and discover web services.

Real-Life Analogy

UDDI = phone directory of web services.

Comparison Table

Feature	SOAP	WSDL	UDDI
Purpose	Messaging	Service description	Service registry
Based On	XML	XML	XML
Role	Communication	Defines service	Discovery

Important Keywords

SOAP, XML, WSDL, UDDI, Service Registry

Conclusion

SOAP, WSDL and UDDI web services architecture ke core components hain.

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4. Hypervisor

Introduction

Hypervisor virtualization ka main software hai.

Definition

Hypervisor is software that creates and manages virtual machines.

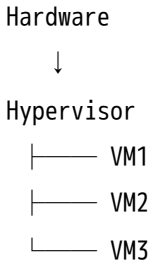
Why It Is Needed

Single hardware par multiple operating systems run karne ke liye.

Types of Hypervisor

Type	Meaning
Type-1	Runs directly on hardware
Type-2	Runs on operating system

Diagram



Advantages

- Better resource utilization
- Multiple OS support

- Isolation

Disadvantages

- Performance overhead
- Security risk

Applications

- VMware
- VirtualBox
- Cloud servers

Important Keywords

Virtual Machine, Type-1 Hypervisor, Type-2 Hypervisor

Conclusion

Hypervisor virtualization ka main controller hota hai.

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5. Virtualization

Introduction

Virtualization cloud computing ka backbone hai.

Definition

Virtualization is the technique of creating virtual versions of hardware, servers or operating systems.

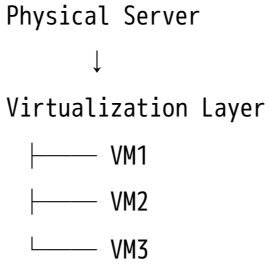
Why It Is Needed

Physical hardware cost reduce karne ke liye.

Types

Type	Description
Hardware Virtualization	Virtual hardware
Server Virtualization	Multiple virtual servers
Storage Virtualization	Virtual storage
Network Virtualization	Virtual networking

Diagram



Advantages

- Cost saving
- Better utilization
- Scalability

Disadvantages

- Complexity
- Security issues

Applications

- Cloud computing
- Testing environments
- Data centers

Conclusion

Virtualization cloud computing ko efficient and scalable banata hai.

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6. SaaS / PaaS / IaaS

Introduction

Ye cloud service models hain.

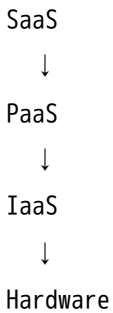
Definitions

Model	Meaning
SaaS	Software as a Service
PaaS	Platform as a Service
IaaS	Infrastructure as a Service

Comparison Table

Feature	SaaS	PaaS	IaaS
User Control	Low	Medium	High
Example	Gmail	Heroku	AWS EC2
Usage	Software use	App development	Infrastructure

Diagram



Advantages

- Easy access
- Cost reduction

- Scalability

Disadvantages

- Vendor lock-in
- Internet dependency

Important Keywords

SaaS, PaaS, IaaS, Cloud Services

Conclusion

Cloud service models different levels of cloud resources provide karte hain.

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7. Web Service Architecture

Definition

Web service architecture defines communication between provider, requester and registry.

Components

Component	Work
Provider	Service provide karta hai
Requester	Service use karta hai
Registry	Service store karta hai

Diagram

```
Provider → Registry ← Requester
```

Conclusion

Web service architecture organized communication provide karti hai.

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8. Cloud Monitoring

Definition

Cloud monitoring is the process of tracking cloud performance, availability and security.

Activities

- Performance monitoring
- Resource tracking
- Security alerts
- Fault detection

Advantages

- Better performance

- Downtime reduction
- Security improvement

Diagram

```
Cloud Resources
      ↓
Monitoring Tool
      ↓
Reports & Alerts
```

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9. Cloud Mashups

Definition

Cloud mashups combine multiple cloud services into one integrated application.

Example

Google Maps + Weather API = Travel Application

Advantages

- Better functionality
- Easy integration
- Time saving

Conclusion

Cloud mashups multiple services combine karke powerful applications banate hain.

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10. Cloud Middleware

Definition

Cloud middleware is software that connects applications and cloud infrastructure.

Functions

- Communication
- Resource management
- Data integration

Applications

- Distributed systems
- Cloud platforms

🔥 MOST IMPORTANT TOPICS

⭐ Cloud Characteristics
⭐ SOA
⭐ SOAP-WSDL-UDDI
⭐ Hypervisor

⭐ Virtualization

⭐ SaaS/PaaS/IaaS

⭐ MOST IMPORTANT 7-MARK QUESTIONS

1. Define cloud computing and explain characteristics.
2. Explain SOA architecture.
3. Explain SOAP, WSDL and UDDI.
4. Explain Hypervisor with types.
5. Explain virtualization.
6. Explain SaaS, PaaS and IaaS.
7. Explain cloud monitoring.

⭐ MOST IMPORTANT 14-MARK QUESTIONS

1. Explain SOAP, WSDL and UDDI in detail.
2. Explain virtualization and hypervisor architecture.
3. Explain cloud service models with comparison.
4. Explain cloud computing characteristics in detail.

🎯 PYQ-BASED EXPECTED QUESTIONS

⭐ Very High Probability

✅ Cloud Characteristics

✅ SOA

✅ SOAP-WSDL-UDDI

✅ Hypervisor

✅ Virtualization

⭐ High Probability

✅ SaaS/PaaS/IaaS

✅ Web Service Architecture

✅ WSDL

⭐ Medium Probability

✅ Cloud Monitoring

✅ Cloud Mashups

✅ Cloud Middleware

⚡ ONE-NIGHT REVISION NOTES

Topic	Quick Revision
SOA	Service-based architecture
SOAP	XML messaging protocol
WSDL	Service description
UDDI	Service registry
Hypervisor	VM manager
Virtualization	Virtual hardware
SaaS	Software online
PaaS	Platform for apps
IaaS	Infrastructure services

🧠 MEMORY TRICKS

SOAP Structure

👉 “EHBF”

- E = Envelope
- H = Header
- B = Body
- F = Fault

Cloud Models

👉 “SPI”

- S = SaaS
- P = PaaS
- I = IaaS

🚀 TOPPER ANSWER WRITING TIPS

Always Write:

```
Definition
↓
Diagram
↓
Working
↓
Advantages
↓
Applications
↓
Conclusion
```

Draw Diagrams For:

✅ Hypervisor

✅ Virtualization

✅ SOAP Structure

✅ SOA Architecture

✅ SaaS-PaaS-IaaS Stack

Keywords to Underline

Scalability, Virtualization, Hypervisor, SOA, SOAP, WSDL, UDDI, SaaS, PaaS, IaaS