



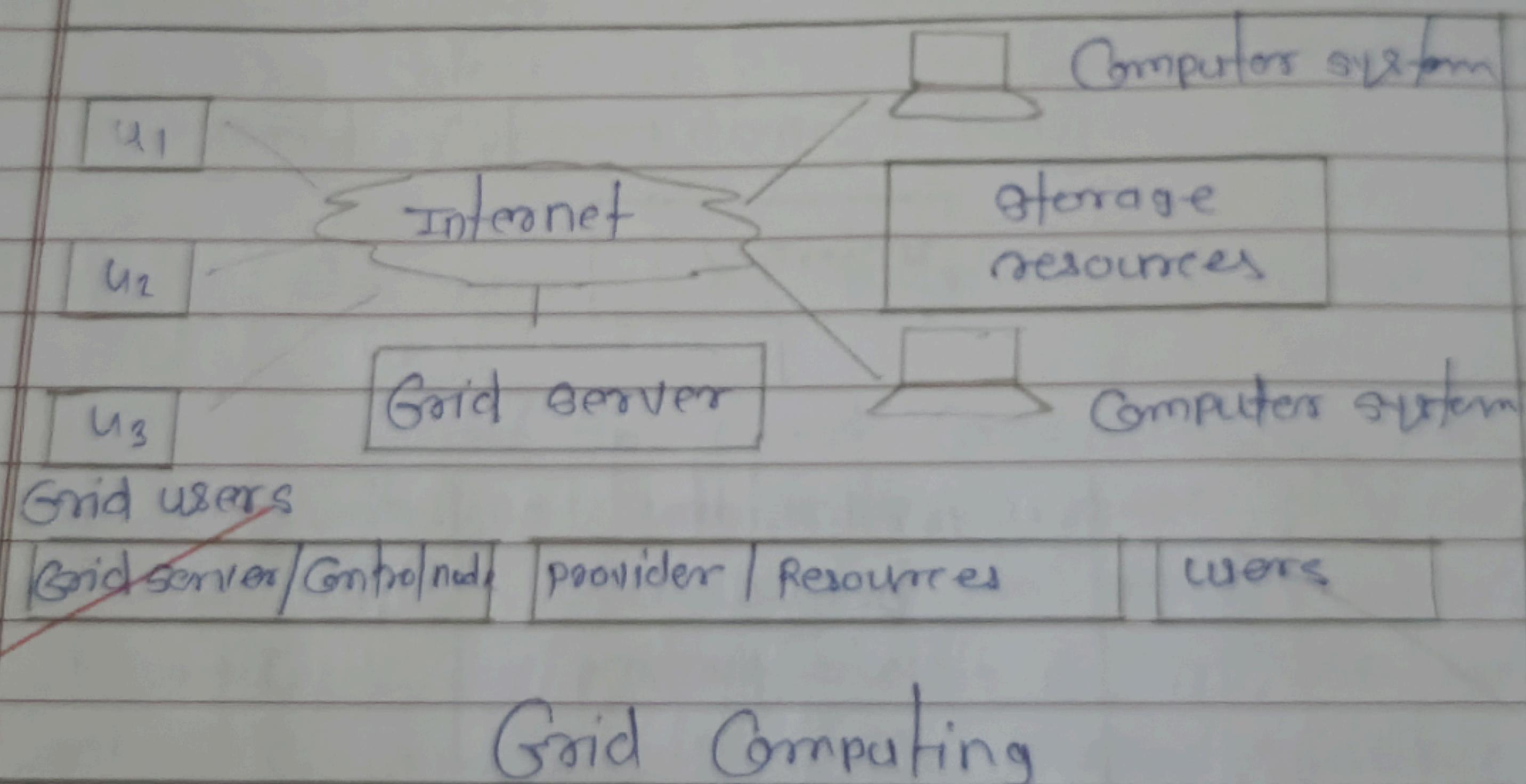
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Subject :- Cloud Computing

a-1 Define grid computing, cluster computing and cloud computing with neat diagram.

- Grid Computing :- uses distributed computers in different locations to solve a large task resources are loosely coupled.
- cluster Computing :- A group of interconnected computers working together as a single system to improve performance & availability
- cloud Computing :- provides on-demand access to computing resources (servers, storage, applications) over the internet.



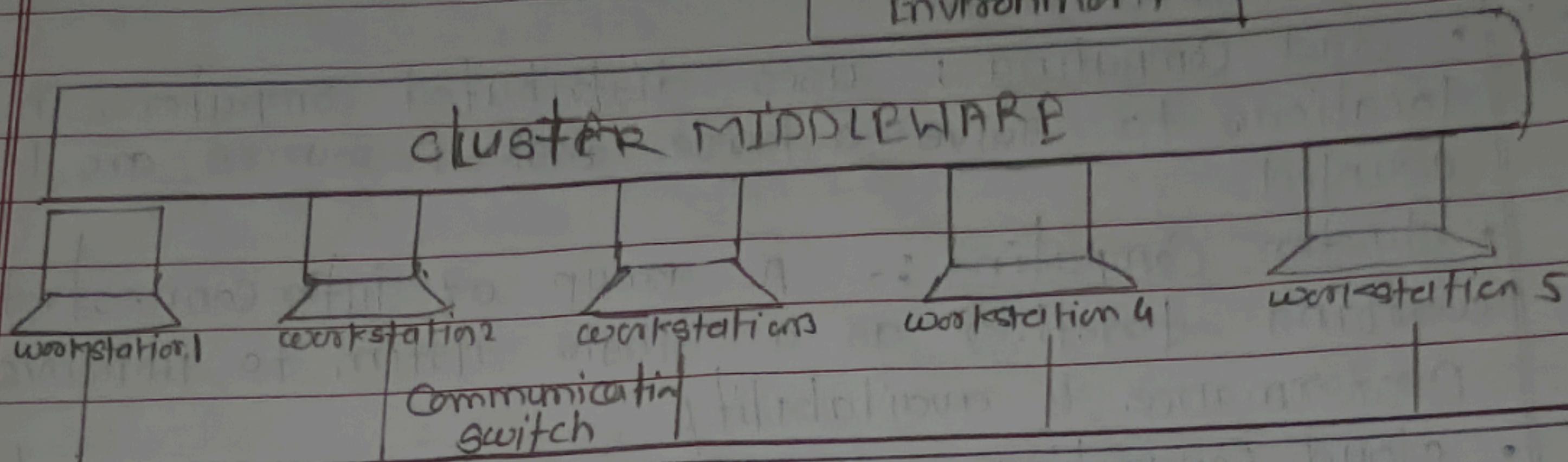


sequential Applications

parallel Applications

parallel programming
Environment

cluster MIDDLEWARE



Cluster Computing

client information

front end

Internet

Application

service

cloud runtime

storage

infrastructure

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Backend

Cloud Computing



Q-2

→ Define Concept of Virtualization with its types
Virtualization is a technology that creates virtual representations of computing resources like servers, storage and networks allowing multiple virtual machines (VMs) to run on a single physical machine effectively utilizing its hardware more efficiently.

Types of Virtualization :-

a) Type 1 (bare metal) :-

Also known as system virtualization where a hypervisor directly interacts with the physical hardware managing the allocation of resources to multiple guest virtual machines (VMs).

b) Type 2 (Guest - server) :-

A host operating system runs on the physical hardware and then hosts multiple guest operating systems within it, acting as a virtual machine monitor (VMM).

Q-3

State the term load balancing in cloud Computing

→ Load balancing in cloud Computing is the process of distributing workloads across multiple servers in a cloud environment to ensure efficient resource utilization, high availability, optimal performance by directing traffic to the most suitable server based on factors like :-

- Server capacity,
- Current load
- User location



Q-4 State the cloud computing architecture monolithic architecture 2. SOA 3) microservice

→ I) Monolithic Architecture :-

A traditional approach where an application is built as a single large unit with all its functionalities tightly coupled. This can be simpler to develop initially but can become difficult to maintain, scale & update as the application grows.

II) SOA (Service-oriented Architecture) :-

An architecture that breaks down the applications into smaller independent services that communicate with each other through well-defined interfaces. This allows for greater modularity, flexibility & easier scalability. However, it can introduce complexity in managing the interactions between the services.

III) Microservices Architecture :-

A further evolution of SOA, where services are even smaller, more granular & focused on specific functionalities. This allows for even higher agility, faster development. However, it requires more complex infrastructure management and co-ordination between services.



Q-5

Explain benefits of cloud computing.

→ Benefits of cloud Computing :-

a) Cost saving :-

Cloud Computing eliminates the need for large capital expenditure on hardware and infrastructure. Businesses pay only for the resources they consume, leading to significant cost reductions.

b) Scalability and flexibility :-

Cloud resources can be easily scaled up or down based on demand. This allows a business to adapt to changing needs without the expense of managing physical infrastructure.

c) Enhanced collaboration :-

Cloud-based platforms enable teams to collaborate seamlessly, regardless of location. This can lead to improved productivity and faster turnaround times.

d) Improved security :-

Cloud providers invest heavily in security measures to protect their infrastructure and data. This often results in better security than a business can achieve on their own.

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