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Reg.No

**SNS COLLEGE OF TECHNOLOGY**

(Autonomous)



MCA- Internal Assessment –I (June 2023)

Academic Year 2022-2023(Even) / Second Semester

**19CAE712 –Cloud Computing & Virtualization Techniques****Time: 1<sup>1/2</sup> Hours****Maximum Marks: 50****Answer Key****PART - A (5 x 2 = 10 Marks)**

- |   |   |     |    |
|---|---|-----|----|
|   |   | CO  | BL |
| 1   | <b>Narrate the design objectives of cloud computing?</b><br>The main motivation behind cloud computing is to <b>enable businesses to get access to data centers and manage tasks from a remote location.</b>  | CO1 | AN |
| 2   | <b>What is Demand on Computing (ODC)?</b><br>On-demand computing (ODC) is a <b>delivery model in which computing resources are made available to the user as needed.</b> The resources may be maintained within the user's enterprise or made available by a cloud service provider.  | CO1 | R  |
| 3   | <b>List Cloud computing services.</b><br>There are four main types of cloud computing: private clouds, public clouds, hybrid clouds, and multiclouds. There are also three main types of cloud computing services: <b>Infrastructure-as-a-Service (IaaS), Platforms-as-a-Service (PaaS), and Software-as-a-Service (SaaS)</b>   | CO1 | U  |
| 4   | <b>Generalize your understanding on hardware level virtualization</b><br>An abstract execution environment in terms of computer <i>hardware</i> in which guest OS can be run, referred to as <i>Hardware-level virtualization</i> .   | CO2 | AN |
| 5   | <b>Write about the responsibilities of VMM.</b><br>A hypervisor, or virtual machine monitor (VMM), is virtualization software that creates and manages multiple virtual machines (VMs) from a single physical host machine. Acting as a VMM, the hypervisor <b>monitors, pools and allocates resources — like CPU, memory and storage — across all guest VMs.</b>   | CO2 | R  |
| <b>PART - B (2 x 13 = 26, 1 x 14=14Marks)</b> |   |     |    |
| 6 (a)   | <b>Explain any two models of distributed computing.</b><br>Workstation Model<br>1. Several workstations (PCs) interconnected by a high-speed communication network (LAN).<br>2. Each workstation is equipped with its own disk and serving as a single-user computer (the WS is called diskfull).<br>Processor-Pool Model<br>1. The pool of processors consists of a large number of microcomputers and minicomputers attached to the network.<br>2. Each processor in the pool has its own memory to load and run a system program or an application program of the distributed computing system.<br><b>(OR)</b> | CO1 | AN |
| (b)   | <b>Rephrase Service Management and on demand computing</b><br>Cloud Service Management and Operations entails all the activities that an organization does to plan, design, deliver, operate, and control the IT and cloud services that it offers to customers. Service management includes the operational aspects of your applications and services.<br>On-demand self-service cloud resources are resources that are provisioned  | CO1 | AN |

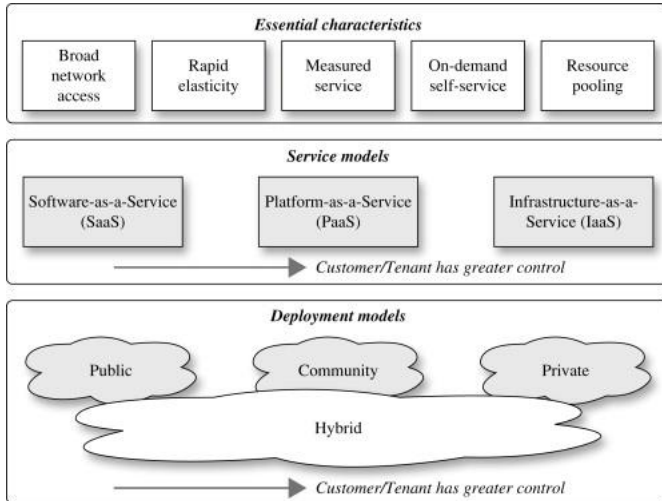
without human interaction. With an on-demand self-service, user can immediately access and use cloud services as needed after signing up. For example, user can sign up for DigitalOcean and immediately start deploying Droplets or databases.

7 (a)

Analyze in detail about service models and deployment models of cloud

CO1 AN

The deployment model based on the IaaS and the PaaS service model is called the public cloud. A public cloud is an offer from a service provider (for example, Microsoft Azure), that can be accessed by the public. This includes individuals as well as companies.



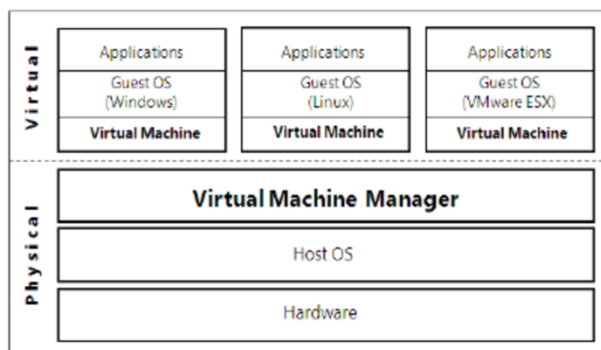
(OR)

(b) Examine various classes of virtualization architecture

CO2 AN

Common virtualization layers include the **instruction set architecture (ISA) level, hardware level, operating system level, library support level, and application level**  
Benefits of Virtualization

1. More flexible and efficient allocation of resources.
2. Enhance development productivity.
3. It lowers the cost of IT infrastructure.
4. Remote access and rapid scalability.
5. High availability and disaster recovery.
6. Pay per use of the IT infrastructure on demand.
7. Enables running multiple operating systems.



8 (a) Demonstrate the role of Cloud provider, consumer, broker, auditor and security in CO1 E

Oracle Cloud eco system

There are five major actors in NIST cloud computing reference architecture. They are:

1. Cloud Consumer
2. Cloud Provider
3. Cloud Carrier
4. Cloud Auditor
5. Cloud Broker

### **Cloud Consumer**

The end user that the cloud computing service is designed to support is the cloud consumer. An individual or corporation with a working relationship with a cloud provider and utilizing its services is referred to as a cloud consumer.

### **Cloud Provider**

Any individual, group, or other entity in charge of making a service accessible to cloud users is a cloud provider.

### **3. Cloud Carrier**

A cloud carrier serves as an intermediary between cloud providers and customers, facilitating connectivity and transport of cloud services. Customers can access the cloud through the network, telecommunication, and other access equipment provided by cloud carriers.

### **4. Cloud Auditor**

An unbiased evaluation of cloud services, information system operations, performance, and the security of a cloud computing implementation can be done by a cloud auditor.

### **5. Cloud Broker**

An organization called a "Cloud Broker" controls how cloud services are used, performed, and delivered and negotiates contracts between cloud providers and cloud users. The integration of cloud services could become too difficult for cloud consumers to handle as cloud computing develops.

(Or)

- (b) Organize various implementation levels of virtualization technique.

‘Virtualization’ is defined as the act of “creating a virtual (rather than actual) version of something, including virtual computer hardware platforms, storage devices, and computer network resources”

**Full Virtualization:** This technique fully virtualizes the main physical server to support applications and software to operate in a much similar way on virtualized divisions. This creates an environment as if it is working on a unique server.

**Virtual machines:** Virtual machines are popularly known as VMs, imitate certain factual or illusory hardware requiring the valid resources from the host, which is nothing but the actual machine operating the VMs.

**Para-Virtualization:** This methodology clearly runs modified versions of operating systems. Only the software and programs are carried out in a precise manner to work for their exclusive websites without executing any kind of hardware simulation.

**Operating System level Virtualization:** Operating system level virtualization is specially intended to grant the necessary security and separation to run manifold applications and replicas of the same operating system on the same server. Isolating, segregating and providing a safe environment enables the easy running and sharing of machines of numerous applications operating on a single server. This technique is used by Linux-VServer, FreeBSD Jails, OpenVZ, Solaris Zones and Virtuozzo.

CO2 APP

