# MUTHAYAMMAL ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi, Accredited by NAAC & Affiliated to Anna University)
Rasipuram - 637 408, Namakkal Dist., Tamil Nadu

Estd. 2000

IQAC

## MUST KNOW CONCEPTS

**MKC**

**MCA**

**2021-2022**

**Subject Code/Name : 19CAC11 - Cloud Computing Technologies**

**Year/Sem/Sec : II / III / -**

| S.No | Term | Notation ( Symbol) | Concept/Definition/Meaning/Units/Equation /Expression | Units |
|---|---|---|---|---|
| **Unit I : Distributed Systems** | | | | |
| 1 | Cloud Computing | -- | Cloud Computing is the use of hardware and software to deliver a service over a network (typically the Internet). | I |
| 2 | Distributed Computing | -- | A distributed computer system consists of multiple software components that are on multiple computers, but run as a single system. | I |
| 3 | Remote Invocation | -- | Remote Method Invocation (RMI) refers to calling a method on a remote object. | I |
| 4 | Request-Reply Protocols | -- | Request–response or request–reply is one of the basic methods computers use to communicate with each other in a network. | I |
| 5 | Remote Procedure Call | -- | RPC is a protocol that one program can use to request a service from a program located in another computer on a network without having to understand the network's. | I |
| 6 | Remote Method Invocation | -- | RMI is an API which allows an object to invoke a method on an object that exists in another address space, which could be on the same machine or on a remote machine. | I |
| 7 | Group communication | -- | Group communication is the act of sending and receiving messages to multiple members of a group. | I |
| 8 | Unicast Communication | -- | Unicast is the term used to describe communication where a piece of information is sent from one point to another point. | I |
| 9 | Board cast Communication | -- | Broadcast communication is a track within mass communication that pertains to video and audio content for use on a variety of platforms. | I |

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| 10 | Multi cast Communication | -- | IP multicast and overlay multicast provide mechanisms for delivering the same message to multiple recipients in a more efficient manner. | I |
| 11 | Ordered Multicast | -- | All messages are delivered in the same order to each receiver. | I |
| 12 | Characteristics of cloud | -- | • No up-front commitments<br>• On-demand access<br>• Nice pricing<br>• Simplified application acceleration and scalability | I |
| 13 | Distributed Systems | -- | A distributed system is a collection of independent computers that appears to its users as a single coherent system | I |
| 14 | Application of DS | -- | Finance and Commerce<br>Information systems<br>Creative and entertainment Industries | I |
| 15 | Causal ordering | -- | If multicast(g,m) □ multicast(g,m') then any correct process that delivers m' will have already delivered m. | I |
| 16 | Time Ordering | -- | One way to define an order of events in a distributed system would be to have a physical clock. | I |
| 17 | Ordering in Distributed System | -- | A distributed algorithm is given for synchronizing a system of logical clocks which can be used to totally order the events. | I |
| 18 | Total ordering | -- | If a correct process delivers message m before m then any other correct process that delivers m' will have already delivered m. | I |
| 19 | Call by Value | -- | The call by value method of passing arguments to a function copies the actual value of an argument into the formal parameter of the function. | I |
| 20 | Call by Reference | -- | The cloud computing reference model is an abstract model that characterizes and standardizes the functions of a cloud computing environment by partitioning it into abstraction layers and cross-layer functions. | I |
| 21 | Reliable multicast | -- | A reliable multicast protocol allows a group of processes to agree on a set of messages received by the group | I |
| 22 | Categories of Ordering | -- | FIFO Ordering<br>Causal Ordering<br>Total Ordering | I |

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| 23 | Physical Clock Synchronization | -- | Physical clock synchronization algorithms can be classified as centralized and distributed. These have one node with a real-time receiver and are called time server node. | I |
| 24 | UTC | -- | A physical time server is needed to access the current time from a universal time coordinator (UTC). | I |
| 25 | Logical Ordering | -- | A logical clock is a mechanism for capturing chronological and causal relationships in a distributed system. | I |
| **Unit II : Introduction To Cloud Computing** | | | | |
| 26 | Cloud Computing | -- | Cloud Computing is the delivery of computing services such as servers, storage, databases, networking, software, analytics, intelligence, and more, over the Cloud (Internet). | II |
| 27 | Resource broker | -- | Resource broker provides pairing services between the service requester and the service provider | II |
| 28 | Cloud Computing Basics | -- | The delivery of computing services including servers, storage, databases, networking, software, analytics, and intelligence over the Internet | II |
| 29 | Features of Cloud Computing | -- | • On-Demand Self-Service.<br>• Easy Maintenance.<br>• Large Network Access.<br>• Availability.<br>• Automatic System.<br>• Economical.<br>• Security. | II |
| 30 | Elasticity in Cloud | -- | Elasticity is the ability to grow or shrink infrastructure resources dynamically as needed to adapt to workload changes in an autonomic manner, maximizing the use of resources. | II |
| 31 | Ondemand provisioning | -- | On-demand computing is a delivery model in which computing resources are made available to the user as needed. | II |
| 32 | Application | -- | A cloud application simply refers to any software application that is deployed in a cloud environment rather than being hosted on a local server or machine. | II |
| 33 | Benefits | -- | a natural disaster, power failure or other crisis, having your data stored in the cloud ensures it is backed up and protected in a secure and safe location. | II |

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| 34 | Data Center | -- | A data center is a physical facility that organizations use to house their critical applications and data. | II |
| 35 | Distributed Servers | -- | A distributed database system appears to a user as a single server but is, in fact, a set of two or more servers. | II |
| 36 | Cloud Storage | -- | This is a form of networked data storage where data files are stored on multiple virtual servers. | II |
| 37 | Characterization of Distributed Systems | -- | A distributed system is one in which components located at networked computers communicate and coordinate their actions only by passing messages. | II |
| 38 | Risks of storing data in the Cloud | -- | • Reliability<br>• Security<br>• User error<br>• Access problems | II |
| 39 | Server Consolidation in Data Centers | -- | Server consolidation makes it possible to share a server's compute resources among multiple applications and services simultaneously. | II |
| 40 | Types of parallel computing | -- | • Bit-level parallelism<br>• Instruction-level parallelism<br>• Task parallelism<br>• Super word-level parallelism | II |
| 41 | Bit-level parallelism | -- | Increases processor word size, which reduces the quantity of instructions | II |
| 42 | Instruction-level parallelism | -- | The hardware approach works upon dynamic parallelism, in which the processor decides at run-time which instructions to execute in parallel. | II |
| 43 | Parallel Computing | -- | A simultaneously execute multiple, smaller calculations broken down from an overall larger, complex problem. | II |
| 44 | Features of Cloud | -- | • Easy Maintenance.<br>• Scalability And Rapid Elasticity.<br>• Economical.<br>• Measured And Reporting Service.<br>• Security. | II |
| 45 | Eucalyptus | -- | Eucalyptus is an open source software platform for implementing Infrastructure as a Service (IaaS) in a private or hybrid cloud computing environment. | II |
| 46 | OpenNebula | -- | OpenNebula is an open-source tool for datacenter virtualization. | II |

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| 47 | OpenStack | -- | OpenStack is an open source platform that uses pooled virtual resources to build and manage private and public clouds. | II |
| 48 | Aneka | -- | Aneka is an Application Platform-as-a-Service (Aneka PaaS) for Cloud Computing. | II |
| 49 | Cloudsim | -- | CloudSim is a framework for modeling and simulation of cloud computing infrastructures and services. | II |
| 50 | Distributed Servers | -- | A distributed database system appears to a user as a single server but is, in fact, a set of two or more servers. | II |
| **Unit III : Cloud Infrastructure** | | | | |
| 51 | Cloud Infrastructure | -- | Cloud computing infrastructure is the collection of hardware and software elements needed to enable cloud computing | III |
| 52 | Cloud Provider | -- | Is a company that offers some component of cloud computing typically infrastructure as a service, software as a Service or Platform as a Service. It is something referred as CSP | III |
| 53 | Cloud Broker | -- | It is a third party individual or business that act as an intermediary between the purchase of cloud computing service and sellers of that service | III |
| 54 | Cloud Auditors | -- | A cloud auditor is a party that can perform an independent examination of cloud service controls with the intent to express an opinion thereon. | III |
| 55 | Cloud Carriers | -- | Cloud Carrier is an intermediary that provides connectivity and transport of cloud services from Cloud Providers to Cloud Consumers. | III |
| 56 | Cloud Consumer | -- | A cloud consumer represents a person or organization that maintains a business relationship with, and uses the service from a cloud provider. | III |
| 57 | Public | -- | A public cloud is a type of computing in which a service provider makes resources available to the public via the internet. | III |
| 58 | Private | -- | The private cloud is defined as computing services offered either over the Internet | III |
| 59 | Hybrid | -- | Hybrid cloud refers to a mixed computing, storage, and services environment made up of on-premises infrastructure, private cloud services, and a public cloud such as Amazon Web Services (AWS) | III |

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| 60 | Community | -- | Community cloud computing refers to a shared cloud computing service environment that is targeted to a limited set of organizations or employees | III |
| 61 | Cloud Models | -- | • IaaS<br>• Paas<br>• Saas | III |
| 62 | Iaas | -- | Infrastructure as a service (IaaS) is a cloud computing offering in which a vendor provides users access to computing resources such as storage, networking, and servers. | III |
| 63 | Paas | -- | PaaS (Platform as a Service)computing platforms which typically includes operating system, programming language execution environment, database, web server etc. | III |
| 64 | SaaS | -- | SaaS: Software as a Service. Software as a Service, also known as cloud application services, represents the most commonly utilized option for businesses in the cloud market. | III |
| 65 | Cloud storage providers | -- | Cloud storage is a cloud computing model that stores data on the Internet through a cloud computing provider who manages and operates data storage as a service | III |
| 66 | Internet of Things | -- | The Internet of Things (IoT) refers to a system of interrelated, internet-connected objects that are able to collect and transfer data over a wireless network without human intervention. | III |
| 67 | Sensing Layers | -- | Sensors and other data-collecting devices form the initial layer of any IoT system. | III |
| 68 | Network Layers | -- | The "network layer" is the part of the Internet communications process where these connections occur, by sending packets of data back and forth between different networks. | III |
| 69 | Data Processing Layer | -- | The massive amount of data our IoT sensors collect, we need to process it. | III |
| 70 | Application Layer | -- | The application layer is the interface between the IoT device and the network with which it will communicate. | III |
| 71 | User Interface | -- | The user interface (UI) is the point at which human users interact with a computer, website or application. | III |

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| 72 | Application of IoT | -- | The Internet of Things (IoT) describes the network of physical objects “things” that are embedded with sensors, software, and other technologies | III |
| 73 | Advantage of IoT | -- | Remote Monitoring<br>Minimize human effort<br>Save Time<br>Improve Security | III |
| 74 | Disadvantage of IoT | -- | Security<br>Privacy<br>Complexity | III |
| 75 | Applications of IoT | -- | Manufacturing<br>Media<br>Building and human automation | III |
| **Unit IV : Cloud Enabling Technologies** | | | | |
| 76 | SOA | -- | SOA is an architectural style for building software applications that use services available in a network such as the web. | IV |
| 77 | Web Service | -- | A Web service is a method of communication between two electronic devices over a network. | IV |
| 78 | Virtualization | -- | Virtualization is technology that lets you create useful IT services using resources that are traditionally bound to hardware. | IV |
| 79 | Virtualization and Cloud Computing | -- | virtualization can make one resource act like many, while cloud computing lets different users access a single pool of resources. | IV |
| 80 | Virtual Machine | -- | A Virtual Machine Manager, or VMM for short, is a program that creates, manages, and governs virtual machines. | IV |
| 81 | Hypervisor | -- | A hypervisor is a process or a function to help admins isolate operating system and applications from the underlying hardware. | IV |
| 82 | Types of Hypervisor | -- | • Micro-Kernal Architecture<br>• Monolithic hypervisor Architecture | IV |
| 83 | CPU Virtualization | -- | CPU Virtualization is one of the cloud-computing technology that requires a single CPU to work, which acts as multiple machines working together | IV |

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| 84 | Virtualization Tools | -- | Virtualization is a technique in which the user required services run remotely in a ubiquitous environment which gives salable resources. | IV |
| 85 | Virtual Memory | -- | Virtual memory is a feature of an operating system that enables a computer to be able to compensate shortages of physical memory by transferring pages of data from random access memory to disk storage. | IV |
| 86 | I/O Devices | -- | I/O devices are the pieces of hardware used by a human (or other system) to communicate with a computer | IV |
| 87 | Desktop Virtualization | -- | Desktop virtualization is a method of simulating a user workstation so it can be accessed from a remotely connected device. | IV |
| 88 | Server Virtualization | -- | Server virtualization is the process of dividing a physical server into multiple unique and isolated virtual servers by means of a software application. | IV |
| 89 | Google App Engine | -- | Google App Engine is a cloud computing platform as a service for developing and hosting web applications in Google-managed data centers. | IV |
| 90 | Amazon AWS | -- | The lead cloud computing platform, Amazon Web Services (AWS) is the primary profit driver for Amazon. | IV |
| 91 | Cloud Federation | -- | Cloud federation is the practice of interconnecting the cloud computing environments of two or more service providers for the purpose of load balancing traffic and accommodating spikes in demand. | IV |
| 92 | Emulation | -- | Emulation Cloud is an open application development environment that helps customers and third-party developers create, test, and fine-tune customized applications in a completely virtual environment. | IV |
| 93 | Advantages of Virtualization | -- | Virtualization can increase IT agility, flexibility and scalability while creating significant cost savings. | IV |
| 94 | Disadvantages of Virtualization | -- | • It can have a high cost of implementation.<br>• It still has limitations.<br>• It creates a security risk.<br>• It creates an availability issue.<br>• It creates a scalability issue.<br>• It takes time. | IV |

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| 95 | Levels of Virtualization | -- | • Instruction Set Architecture Level (ISA)<br>• Hardware Abstraction Level (HAL)<br>• Operating System Level<br>• Library Level.<br>• Application Level. | IV |
| 96 | Virtualization Structures | -- | Virtualization is a technique that makes a virtual ecosystem of storage devices and the server OS. | IV |
| 97 | Virtual Network | -- | It is a logically separated network inside the servers that could be expanded across multiple servers | IV |
| 98 | Benefits of Virtualization | -- | • Security<br>• Flexible Operations<br>• Economical<br>• Flexible data transfer<br>• Remove system failure risks | IV |
| 99 | Instruction Set Architecture Level (ISA) | -- | ISA virtualization can work through ISA emulation. | IV |
| 100 | Library Level | -- | The operating system is cumbersome, and this is when the applications make use of the API that is from the libraries at a user level. | IV |
| **Unit V : Micro services And Devops** | | | | |
| 101 | Micro services | -- | Micro services, are a specific method of designing software systems to structure a single application as a collection of loosely coupled services. | V |
| 102 | Advantages to Micro services | -- | • Increase agility<br>• Improve workflows<br>• Decrease the amount of time it takes to improve production | V |
| 103 | Design patterns | -- | • Aggregator.<br>• API Gateway.<br>• Chained or Chain of Responsibility.<br>• Asynchronous Messaging.<br>• Database or Shared Data.<br>• Event Sourcing. | V |

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| 104 | Aggregator Pattern | -- | Aggregator in the computing world refers to a website or program that collects related items of data and displays them. | V |
| 105 | Web Micro service | -- | Micro services are architectural styles typically used in modern web apps that require more fragmented functionality. | V |
| 106 | Monolithic Architecture | -- | Is similar to a big container wherein all the software components of an application are assembled together and tightly packaged. | V |
| 107 | DevOps | -- | DevOps is the combination of cultural philosophies, practices, and tools that increases an organization's ability to deliver applications and services at high velocity | V |
| 108 | Adoption of DevOps | -- | Adopting DevOps allows you to streamline your software delivery lifecycle and to be able to deliver better software faster. | V |
| 109 | DevOps tools | -- | • Selenium<br>• Puppet<br>• Chef<br>• Git<br>• Jenkins<br>• Ansible<br>• Docker | V |
| 110 | Docker | -- | Docker provides a container environment that can be used to host any application. | V |
| 111 | Difference between SOA and Micro services | -- | Service-oriented architecture (SOA) has an enterprise scope, while the micro services architecture has an application scope. | V |
| 112 | Micro services and API | -- | The micro service can then be delivered through an application programming interface (API). | V |
| 113 | History of DevOps | -- | The DevOps movement started to coalesce some time between 2007 and 2008, when IT operations and software development communities raised concerns what they felt was a fatal level of dysfunction in the industry. | V |
| 114 | Key elements of DevOps | -- | • Continuous Integration.<br>• Continuous Delivery.<br>• Micro services.<br>• Infrastructure as Code.<br>• Monitoring and Logging.<br>• Communication and Collaboration. | V |
| 115 | DevOps life cycle | -- | DevOps is training that permits a solitary group to deal with the whole application development life cycle development, testing, deployment, and activities. | V |

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| 116 | Continuous Deployment | -- | The deployment process is performed in such a way that any changes made in the code should not affect the functioning of high traffic website | V |
| 117 | Enterprise in DevOps | -- | Enterprise DevOps approach, your operations teams supply a common set of virtual machine (VM) images or environments that development groups can automate. | V |
| 118 | DevOps software | -- | DevOps is the combination of practices and tools designed to increase an organization's ability to deliver applications and services faster than traditional software development processes. | V |
| 119 | DevOps platform | -- | A DevOps platform combines the ability to develop, secure, and operate software in a single application. | V |
| 120 | Overview of DevOps | -- | DevOps is a set of practices, tools, and a cultural philosophy that automate and integrate the processes between software development and IT teams. | V |
| 121 | Infrastructure as a code | -- | Infrastructure as a code (IaC) is an infrastructure management approach that makes continuous delivery and DevOps possible. | V |
| 122 | Key practices of DevOps | -- | • Configuration Management.<br>• Continuous Integration.<br>• Automated Testing.<br>• Infrastructure as Code.<br>• Continuous Delivery.<br>• Continuous Deployment.<br>• Continuous Monitoring. | V |
| 123 | Continuous Delivery | -- | Continuous delivery is a software development practice where code changes are automatically prepared for a release to production. | V |
| 124 | Continuous Monitoring | -- | Continuous monitoring is the process and technology used to detect compliance and risk issues associated with an organization's financial and operational environment. | V |
| 125 | Configuration Management | -- | Configuration management is a systems engineering process for establishing consistency of a product's attributes throughout its life. In the technology world | V |
| **Placement Questions** | | | | |
| 126 | Utility computing | -- | Utility computing is a plug-in managed by an organization which decides what type of services has to be deployed from the cloud | |

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| 127 | EUCALYPTUS | -- | Elastic Utility Computing Architecture For Linking Your Program To Useful Systems | |
| 128 | Different data centers | -- | • Containerized datacenter<br>• Low density datacenter | |
| 129 | Communication As a Service | -- | CaaS offers the enterprise user features such as desktop call control, unified messaging and desktop faxing. | |
| 130 | Window azure services | -- | • Compute<br>• Storage<br>• Management | |
| 131 | Amazon Web Service | -- | It is a collection of remote computing services also known as a cloud computing platform. | |
| 132 | Simple Storage Device | -- | It is a storage device and the most widely used AWS service | |
| 133 | Elastic Compute Cloud | -- | It provides on-demand computing resources for hosting applications. It is handy in case of unpredictable workloads | |
| 134 | Cloud Watch | -- | To monitor AWS resources, It allows administrators to view and collect key Also, one can set a notification alarm in case of trouble | |
| 135 | Amazon Machine Image | -- | It's a template that provides the information required to launch an instance, which is a copy of the AMI running as a virtual server in the cloud. | |
| 136 | Key-pairs in AWS | -- | Key-pairs are secure login information for your virtual machines | |
| 137 | Snowball | -- | Snowball is a data transport option. It used source appliances to a large amount of data into and out of AWS. | |
| 138 | Red shift | -- | Red shift is a big data warehouse product. It is fast and powerful, fully managed data warehouse service in the cloud. | |
| 139 | Subnet | -- | A large section of IP Address divided into chunks is known as subnets | |
| 140 | Auto-scaling | -- | Auto-scaling is a function that allows you to provision and launch new instances whenever there is a demand. | |

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| 141 | Web Role | -- | A web role is basically used to deploy a website, using languages supported by the IIS platform like, PHP, .NET etc. It is configured and customized to run web applications. | |
| 142 | Worker Role | -- | A worker role is more like an help to the Web role, it used to execute background processes unlike the Web Role which is used to deploy the website | |
| 143 | VM Role | -- | The VM role is used by a user to schedule tasks and other windows services. This role can be used to customize the machines on which the web and worker role is running | |
| 144 | VNet | -- | VNet is a representation of your own network in the cloud. | |
| 145 | Enterprise warehousing | -- | Enterprise warehousing is the phenomenon where the data is developed by the organization having access at a single point throughout the globe. | |
| 146 | Microsoft SharePoint Server | -- | Microsoft SharePoint Server (MOSS) that consist of a complete version of the portal platform. It allows a user to manage, share and even create the document | |
| 147 | PROC MEANS | -- | It refers to the subgroup of statist created in the persistence of the BY statement | |
| 148 | PROC SUMMARY | -- | It is the support statistic giving all varieties of information running simultaneously. | |
| 149 | Components of the Windows Azure platform | -- | • Compute<br>• Storage<br>• App Fabric | |
| 150 | Guest OS in Microsoft Azure | -- | Guest OS is an operating system which runs on the virtual machine which allows you to hosts an instance of a role | |



**Faculty Prepared** **Signature**

**Mrs.R.Pavithra**

**HoD**