CERTIFICATE COURSE ON Cloud and DevOps
1. Cloud Technology AWS & Microsoft Azure

UNIT-I

Cloud Computing basics: Introduction to cloud computing, Advantages of Cloud computing, public, private & hybrid cloud, SAAS, PAAS & IAAS.

Global Infrastructure: Backbone network, Regions & Availability zone

Identity & Access Management: Users, Groups, Roles, Policies, Custom Policies, Multi Factor Authentication, API Key

EC2: Virtualization in AWS, EC2 Instance Types, EC2 Instance Families, EC2 Purchasing Options: (On Demand, Spot, Reserved, Dedicated), Creating AMI Images.

Elastic Block Storage: EBS Types, EBS vs Instance Storage, Volume, EBS Snapshots, Backups & Replications, Mounting EBS Volumes, Elastic File Storage, Managing EFS File Systems, Mounting EFS File Systems, EFS vs EBS.

Load balancers: HA and Scalability Intro, ELB overview, Classic Load balancer, Application Load Balancer, Network Load Balancer, Load Balancer Sticky sessions, Cross zone load balancing, SSL Certificates

UNIT-II

Amazon Relational Database Services: Overview of Relational Databases: RDS Instances and RDS Instance Sizes, Supported Databases, Option Groups, Subnet Groups, Parameter Groups, Why Aurora Database? Snapshots, Automated Backups, Reserved Instances, Replications, Encryption, DynamoDB, NoSQL Overview, DynamoDB Concepts, Tables, Backups, Reserved Capacity, Indexes, Transactions, DocumentDB, Elastic Cache.

Simple Storage Service (S3): Architectural Overview, Buckets, Objects and Folders, Storage Tiers, Lifecycle policies, Versioning, Locking, Access to S3 Buckets, Static Website Hosting, S3 Cross Region Replications, S3 Bucket Policies, Storage classes + Glacier, Lifecycle rules, events notifications and hands on.

CDN, CloudFront and Global Accelerator: Cloud Front overview, CloudFront Signed URL/Cookies, CloudFront Advanced Concepts, AWS Global Accelerator, AWS Global Accelerator.

Serverless: Serverless Intro, Lambda overview, Lambda, Lambda Limits and Edge, DynamoDB overview, API Gateway Overview, API Gateway Security, Cognito overview.

Monitoring Auditing, CloudWatch Metrics, CloudWatch Custom Metric, CloudWatch Dashboard and logs, CloudWatch agent and CloudWatch log agent, Cloud Formation.

UNIT-III

VPC : CIDR, Private and Public IP , Default VPC Overview, Subnet overview, Internet gateway and route tables , NAT Instance and Gateways, DNS resolution and Route53 Private zones, NACL and SG , VPC peering , VPC Endpoints , VPC Flow Logs, Bastion hosts, Site to Site VPN, Virtual Private Gateway, and Customer gateway, Direct connect and direct connect gateway , Transit Gateway.

Microsoft Azure

Azure Active Directory: Overview, what is Azure Active Directory, Group and Access Management Group-based licensing, Azure AD architecture, Default User Permissions, Organization, Groups, Users, Authentication (Multifactor &Self-Service Password Reset), Azure RBAC, Custom Roles in Azure, Privileged Identity Management.

Azure Virtual Machines: How Azure VM's Work internally, VM Types & Sizes, Virtualization technologies in azure, Creation & Management of VM's, Creating VM Images, High Available VM's,

Availability Sets & Availability Zones, VM Scale Sets, VM Scale Sets with Load balancers & application gateways, Dedicated hosts, Maintenance & Updates, VM Extensions, Cloud-Init, Operations.

UNIT-IV

Azure Storage: Azure Storage Accounts Overview, Storage account types, Blob Storage, Page Blobs, Block Blobs, Table Storage, Queue Storage, File Storage, Data Redundancy, Access Tiers, Performance & Scaling, Concurrency, Static Websites using Storage Accounts, Event Handling, Page Blobs, Transferring Data using AzCopy.

Azure Managed Disks, Azure StorSimple and Data Box

Azure SQL, Azure MySQL, Azure Redis Cache, Azure Cosmos DB, ARM Templates.

UNIT-V

Networking: Networking Basics, Virtual Network, Subnets, Network Security Groups, Application Security Groups, Routing, Service Endpoints, Service Endpoint Polices, VNET Peering, Virtual Network TAP, Virtual Networking for Azure Services, Container & Kubernetes networking, VNET Replication for Business Continuity, IP Addressing, Public IP prefix, IpV6 for Azure VNet, Cross network Connectivity, Backend Connectivity Interoperability

Azure DNS: Public DNS (Zones & Records, Alias Records, Reverse DNS and Disaster Recovery)

Azure Load balancers & Application Gateway: Azure Load Balancer Overview, Basic Load Balancer, Standard Load Balancer, Health probes, High Availability ports, Multiple frontends, Outbound Connections, Outbound Rules, Load Balancer Metrics, Azure Application Gateway Overview, Application Gateway Components, Routing, SSL.