PRACTICAL – 05

AIM: Case study on Amazon EC2/Microsoft Azure/Google Cloud Platform.

THEORY:

Cloud computing is a modern technology that provides on-demand access to computing resources such as servers, storage, databases, and applications over the internet. Instead of owning physical hardware, users can rent computing resources from cloud providers and pay only for what they use.

Among the most popular cloud platforms are Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP). These platforms provide Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) models to support various computing needs.

1. Amazon Web Services (AWS)

Introduction:

Amazon Web Services (AWS) is a comprehensive and widely adopted cloud platform launched by Amazon in 2006. It provides a vast range of services, enabling individuals, startups, and enterprises to build and deploy applications on a global scale. AWS is known for its scalability, flexibility, and reliability.

Features:

- Pay-as-you-go pricing model.
- Global infrastructure with multiple availability zones.
- High scalability and elasticity.
- Secure and compliant environment.
- Integration with AI, machine learning, and IoT services.

Services Offered:

- **Compute Services:** Amazon EC2 (Elastic Compute Cloud), AWS Lambda.
- **Storage Services:** Amazon S3 (Simple Storage Service), EBS (Elastic Block Store).
- **Database Services:** Amazon RDS, DynamoDB.
- **Networking Services:** Amazon VPC, Route 53.
- **Security and Identity:** AWS IAM, AWS Shield.
- **AI and Machine Learning:** Amazon SageMaker, Rekognition.
- **Developer Tools:** AWS CodeBuild, CodeDeploy.

Uses:

AWS is used for website hosting, big data analytics, AI and machine learning model training, mobile app backends, and enterprise-grade cloud solutions.

2. Microsoft Azure Introduction:

Microsoft Azure is a cloud computing platform introduced by Microsoft in 2010. It provides a wide range of cloud services designed for building, testing, deploying, and managing applications through Microsoftmanaged data centers. Azure offers strong integration with Windows-based systems and enterprise software.

Features:

- Supports hybrid cloud environments.
- Strong integration with Microsoft products like Windows Server, SQL Server, and Active Directory.
- Global network of data centers ensuring reliability.

- Scalable and flexible infrastructure.
- Comprehensive tools for developers using .NET, Java, and Python.

Services Offered:

- **Compute Services:** Azure Virtual Machines, Azure Kubernetes Service (AKS).
- **Storage Services:** Azure Blob Storage, Azure Files.
- **Database Services:** Azure SQL Database, Cosmos DB.
- **Networking Services:** Azure Virtual Network, Load Balancer.
- **AI and Analytics:** Azure Machine Learning, Cognitive Services.
- **Developer Tools:** Azure DevOps, Visual Studio Integration.
- **Security Services:** Azure Active Directory, Azure Security Center.

Uses:

Azure is widely used by enterprises for running virtual machines, hosting web applications, managing databases, performing analytics, and implementing DevOps pipelines.

3. Google Cloud Platform (GCP) Introduction:

Google Cloud Platform (GCP), launched by Google in 2008, provides cloud computing, storage, and machine learning services. It is known for its strong data analytics and AI capabilities, as well as its use of the same infrastructure that powers Google products such as Search, YouTube, and Gmail.

Features:

- Advanced data analytics and AI tools.
- High-speed global fiber network for low latency.
- Open-source friendly and container-based architecture.
- Strong focus on sustainability and energy efficiency.
- Secure by design with built-in encryption.

Services Offered:

- **Compute Services:** Google Compute Engine, Google Kubernetes Engine (GKE).
- **Storage Services:** Google Cloud Storage, Persistent Disks.
- **Database Services:** Cloud SQL, Firestore, Bigtable.
- **Networking Services:** Virtual Private Cloud (VPC), Cloud CDN.
- **AI and Machine Learning:** TensorFlow, Vertex AI, Vision AI.
- **Big Data and Analytics:** BigQuery, Dataflow.
- **Developer Tools:** Cloud SDK, Cloud Build, Firebase.

Uses:

GCP is mainly used for big data processing, AI and ML development, scalable application hosting, and datadriven analytics solutions.

Result: Case study on Amazon EC2/Microsoft Azure/Google Cloud Platform has been done.