


# National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	Introduction to Cloud Computing	Course Code:	CS4037
	Degree Program:	BS (CS)	Semester:	Spring 2023
	Exam Duration:	60 Minutes	Total Marks:	40
	Paper Date:	27/02/23	Weight	15
	Exam Type:	Midterm I	Page(s):	6

Student : Name: \_\_\_\_\_ Roll No. \_\_\_\_\_ Section: \_\_\_\_\_

Instruction: Attempt question 1, 2, and 3 on the question paper. Attempt question 4, 5, and 6 on answer sheet. If you think some information is missing then assume it and mention it clearly.

## Question # 1: [20 marks, CLO # 1, 2, 3]

From the given options, select the best answer.

- i. Which of the following is a compute service?  
(a) Amazon VPC      (b) Amazon S3      **(c) Amazon EC2**      (d) Amazon CloudFront
- ii. True or False? Cloud service provider owns and maintains the physical servers required for application services, while you provision and use what you need.  
**(a) True**      (b) False
- iii. Which of these are ways to access AWS core services? (Choose three)  
(a) Technical support calls      **(b) Software Development Kits (SDKs)**  
**(c) AWS Management Console**      **(d) AWS Command Line Interface (AWS CLI)**
- iv. Which of the following is a dedicated, high performance storage system used in enterprises and data centers?  
(a) Direct Attached Storage (DAS)      (b) Network Attached Storage (NAS)  
**(c) Storage Area Network (SAN)**      (d) None of the given options
- v. A web service is:  
(a) Not tied to any one OS      (b) Self-describing via Interface  
(c) Discoverable over search engine      **(d) All of the given options**
- vi. AWS Cloud Adaption Framework (AWS CAF) organized into six \_\_\_\_\_.  
(a) Domains      **(b) Perspectives**  
(c) Ideas      (d) Set of Rules

- vii. True or False? To receive the discounted rate associated with Reserved Instances, you must make a full, upfront payment for the term of the agreement.
- (a) True (b) False
- viii. What AWS tool lets you explore AWS services and create an estimate for the cost of your use cases on AWS?
- (a) AWS Pricing calculator (b) AWS Budgets  
(c) AWS Cost and Usage Report (d) AWS Billing Report
- ix. What are the four support plans offered by AWS support?
- (a) Basic, Startup, Business, Enterprise (b) Basic, Developer, Business, Enterprise  
(c) Free, Bronze, Silver, Gold (d) All support is free
- x. How does a customer pay for cloud resources? (Select the best answer)
- (a) Pay for what customer use (b) Pay less when customer reserve  
(c) Pay even less when customer use more (d) All given options can be used simultaneously
- xi. We use \_\_\_\_\_ to compare the costs of running an entire infrastructure environment or specific workload on-premises versus on public cloud.
- (a) Total Cost of Ownership (b) Pricing Calculator  
(c) Billing Dashboard (d) Any one of the given options can be used
- xii. \_\_\_\_\_ uses the cost visualization that is provided by Cost Explorer to provide forecasts of your estimated costs of running services.
- (a) Pricing Calculator (b) Bills Page  
(c) Budgets Page (d) Cost and Usage Report Page
- xiii. You can provision applications and workloads from a region closer to the end users to \_\_\_\_\_ latency.
- (a) Increase (b) Decrease
- xiv. True or False? Networking, storage, compute, and databases are examples of service categories that a cloud service provider offers?
- (a) True (b) False
- xv. A cloud service provider highly recommends to provision compute resources across \_\_\_\_\_ Availability Zones.
- (a) No (b) Multiple (c) All (d) Single

- xvi. The cloud service provider infrastructure features are:
- (a) Elasticity and Scalability (b) Fault Tolerance
- (c) High Availability (d) All of the given options
- xvii. \_\_\_\_\_ means to continue operating properly in the presence of a failure.
- (a) Scalability (b) Elasticity (c) Fault-tolerance (d) None of the given options
- xviii. Which of the following are geographic areas that host two or more Availability Zones?
- (a) Origins (b) Regions (c) Compute Zones (d) Edge Locations
- xix. In shared responsibility model, cloud provider is responsible for what?
- (a) Security of the Cloud (b) Security to the Cloud
- (c) Security in the Cloud (d) Security for the Cloud
- xx. When creating an AWS Identity and Access Management (IAM) policy, what are the two types of access that can be granted to a user?
- (a) Institutional Access (b) Authorized Access
- (c) Programmatic Access (d) Management Console Access

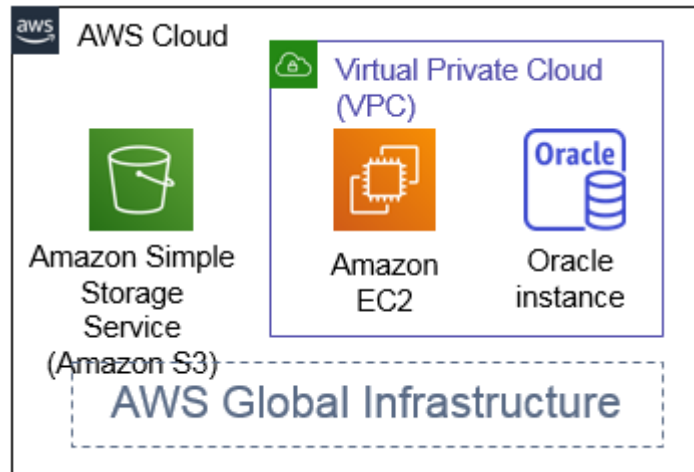
**Question # 2: [04 marks, CLO # 2]**

Provide answers to following questions.

- a) Under which service category does the IAM service appear?
- Security, Identity, & Compliance
- b) Under which service category does the Amazon VPC service appear?
- Networking & Content Delivery
- c) Does the VPC exist at the level of the Region or the level of the Availability Zone?
- VPCs exist at the Region level
- d) Which of the following services are global instead of Regional? Check Amazon EC2, IAM, Lambda, and Route 53.
- IAM and Route 53 are global. Amazon EC2 and Lambda are Regional.

**Question # 3: [04 marks, CLO # 2]**

Consider following deployment and confirm who is responsible for the given operations.



Upgrades and patches to the operating system on the EC2 instance? <b>Customer</b>	Configuration of applications that run on the EC2 instance? <b>Customer</b>
Physical security of the data center? <b>AWS</b>	Oracle upgrades or patches If the Oracle instance runs as an Amazon RDS instance? <b>AWS</b>
Virtualization infrastructure? <b>AWS</b>	Oracle upgrades or patches If Oracle runs on an EC2 instance? <b>Customer</b>
EC2 security group settings? <b>Customer</b>	S3 bucket access configuration? <b>Customer</b>

**Question # 4: [04 marks, CLO # 1]**

Briefly explain any four advantages of using cloud computing over on-premises computing?

- 1. Massive economies of scale:** Because of aggregate usage from all customers, AWS can achieve higher economies of scale and pass savings on to customers.
- 2. Stop guessing capacity:** Eliminate guessing about your infrastructure capacity needs. When you make a capacity decision before you deploy an application, you often either have expensive idle resources or deal with limited capacity. With cloud computing, these problems go away. You can access as much or as little as you need, and scale up and down as required with only a few minutes' notice.
- 3. Increase speed and agility:** In a cloud computing environment, new IT resources are only a click away, which means that you reduce the time it takes to make those resources available to your developers from weeks to just minutes. The result is a dramatic increase in agility for the organization because the cost and time that it takes to experiment and develop are significantly lower.

4. **Stop spending money on running and maintaining data centers:** Focus on projects that differentiate your business instead of focusing on the infrastructure. Cloud computing enables you to focus on your own customers instead of the heavy lifting of racking, stacking, and powering servers.

**Question # 5: [04 marks, CLO # 2]**

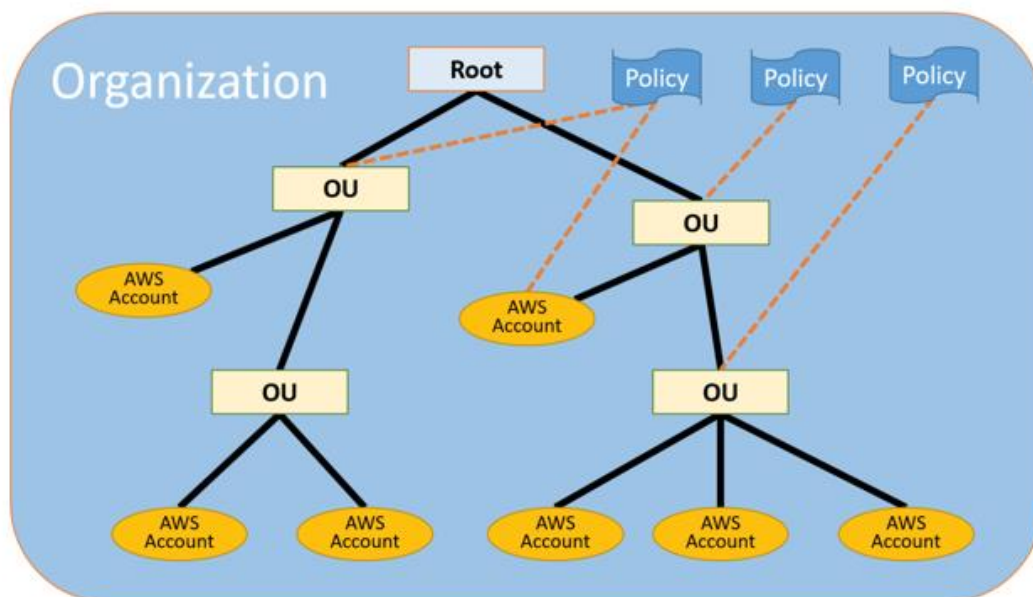
**Briefly explain IAM essential components.**

1. **User:** A person or application that can authenticate with an AWS account.
2. **Group:** A collection of IAM users that are granted identical authorization.
3. **Policy:** The document that defines which resources can be accessed and the level of access to each resource.
4. **Role:** Useful mechanism to grant a set of permissions for making AWS service requests.

**Question # 6: [01 + 02 + 01 marks, CLO # 2]**

**Define AWS organization. Draw hierarchy of AWS organization. Write key features (or benefits) of AWS organization.**

- AWS Organizations is a **free account management service** that enables you to **consolidate multiple AWS accounts into an organization** that you create and centrally manage.
- AWS Organizations include consolidated billing and account management capabilities that help you to better meet the budgetary, security, and compliance needs of your business.



- **Key Features of AWS Organization:**
  - i. Policy-based account management
  - ii. Group based account management
  - iii. Application programming interfaces (APIs) that automate account management
  - iv. Consolidated billing