Roll. No:

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: VI - THEORY EXAMINATION (2023 - 2024)

Subject: Cloud and Edge Computing

Time: 3 Hours　　　　　　　　　　　　　　　　　　　Max. Marks: 100

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

*1. This Question paper comprises of three Sections -A, B, & C. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

*2. Maximum marks for each question are indicated on right -hand side of each question.*

*3. Illustrate your answers with neat sketches wherever necessary.*

*4. Assume suitable data if necessary.*

*5. Preferably, write the answers in sequential order.*

*6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

## SECTION-A　　　　　　　　　　　　　　　　　　　　　　　　　　　　20

1. Attempt all parts:-

1-a.　　　Which of the following is a type of cloud computing service? [CO1]　　1

    (a)　Service-as-a-Software (SaaS)

    (b)　Software-and-a-Server (SaaS)

    (c)　Software-as-a-Service (SaaS)

    (d)　Software-as-a-Server (SaaS)

1-b.　　　Identify the correct statement about cloud computing. [CO1]　　1

    (a)　Cloud computing relies on a set of protocols needed to manage interprocess communications

    (b)　Platforms are used to create more complex software

    (c)　Cloud architecture can couple software running on virtualized hardware in multiple locations to provide an on-demand service

    (d)　All of the mentioned

1-c.　　　How many types of methods are used to combine web services? [CO2]　　1

    (a)　One

    (b)　Two

    (c)　Three

    (d)　None of the mentioned

1-d.　　　Which one of the following is not a type of virtualization [CO2]　　1

    (a)　Hardware Virtualization

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    (b)    Network Virtualization

    (c)    Server Virtualization

    (d)    Broker Virtualization

1-e.    S3 Stands for _____ [CO3]    1

    (a)    Simple Storage Service

    (b)    Software Storage Service

    (c)    **Software Sampling Service**

    (d)    Cant Say

1-f.    Google App Engine is an example of _____. [CO3]    1

    (a)    Software as a Service

    (b)    Infrastructure as a Service

    (c)    Platform as a Service

    (d)    Function as a Service

1-g.    Point out the lightweight protocol. [CO4]    1

    (a)    SPI

    (b)    CoAP

    (c)    HTTP

    (d)    MQTT

1-h.    Application of edge computing is in area of [CO4]    1

    (a)    connected cars

    (b)    smart cities

    (c)    Industry 4.0

    (d)    All of the above

1-i.    (SOTA) refers to…… [CO5]    1

    (a)    Software over-the-air

    (b)    Semicloud over-the-air

    (c)    Service over-the-air

    (d)    None

1-j.    Which OS optimisation code size of AWS IoT OTA (Example generated with GCC for ARM Cortex-M) for ota.c is [CO5]    1

    (a)    9.5 k

    (b)    7.2 k

    (c)    8.3 k

    (d)    7.5 k

2. Attempt all parts:-

2.a.    List 4 EC2 Instances types. [CO1]    2

2.b.    In the context of cloud computing REST stand for _____ [CO2]    2

2.c.    Give any 2 examples of IAAS and PAAS. [CO3]    2

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| 2.d. | Explain Agent Based Systems. [CO4] | 2 |
| 2.e. | Define IOT agent. [CO5] | 2 |

**SECTION-B** — 30

3. Answer any <u>five</u> of the following:-

| 3-a. | What is elasticity and scalability in cloud computing? [CO1] | 6 |
| 3-b. | Discuss the importance of Quality of Service (QoS) and Service Level Agreements (SLAs) in cloud computing, highlighting their impact on customer satisfaction and service reliability. [CO1] | 6 |
| 3-c. | What are the components of service oriented architecture in context of cloud computing? [CO2] | 6 |
| 3-d. | How virtualization is used in cloud computing explain via diagram? [CO2] | 6 |
| 3.e. | Why we need hybrid cloud. Explain in detail. [CO3] | 6 |
| 3.f. | Differentiate between client server model and edge computing. [CO4] | 6 |
| 3.g. | Illustrate the process of Data Streaming. [CO5] | 6 |

**SECTION-C** — 50

4. Answer any <u>one</u> of the following:-

| 4-a. | How evolution of cloud computing took place. Explain in detail. [CO1] | 10 |
| 4-b. | List any 5 Characteristics of cloud computing. How elasticity impact on cloud. [CO1] | 10 |

5. Answer any <u>one</u> of the following:-

| 5-a. | Explain working of Publish Subscribe Model in detail with appropriate example. [CO2] | 10 |
| 5-b. | Discuss about Implementation Levels of Virtualization. [CO2] | 10 |

6. Answer any <u>one</u> of the following:-

| 6-a. | Draw NIST Cloud Computing Reference Architecture and explain in detail. [CO3] | 10 |
| 6-b. | What do you understand by Private cloud. Give example [CO3] | 10 |

7. Answer any <u>one</u> of the following:-

| 7-a. | Explain the mechanism of launching an edge testbed. [CO4] | 10 |
| 7-b. | How condition based monitoring takes place in an edge application. Take connected workforce safety testbed for reference. [CO4] | 10 |

8. Answer any <u>one</u> of the following:-

| 8-a. | Explain about various OTA design considerations with example. [CO5] | 10 |
| 8-b. | Write down the steps involves in AWS FreeRTOS connection. [CO5] | 10 |