(T) Roll No. .....

PAPER ID—11454

B. Tech. EXAMINATION, 2025

(Sixth Semester)

COMPUTER SCIENCE AND ENGINEERING

Cloud Computing

Professional Elective Course-III

Time : 3 *Hours* *Maximum Marks :* 70

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting *one* question from each Section. Q. No. **1** is compulsory. All questions carry equal marks.

1. Write the following : 7×2=14

(a) Define cloud computing in one or two lines and mention one key feature that distinguishes it from traditional computing.

(b) Name any *two* types of cloud deployment models and give a short definition for each.

(c) What is the purpose of CPU virtualization in cloud environments ?

(d) List *two* major risks associated with cloud computing.

(e) What is identify and access management (IAM) in the context of cloud security ?

(f) State any *two* key privacy concerns when using cloud computing services.

(g) What are the *two* main phases of the MapReduce programming model ?

Section A

2. (a) Explain the role of cloud computing in enhancing online social networks and their applications. Provide at least *two* real world examples. 7

   (b) Define cloud computing. Discuss the key characteristics and components of cloud computing that differentiate it from traditional computing models. 7

3. (a) Compare and contrast public cloud, private cloud, hybrid cloud and community cloud. Give suitable examples. 7

   (b) Identify and explain *three* major risks associated with cloud computing. Additionally mention *one* novel application of cloud computing and describe its impact. 7

Section B

4. (a) Explain the SPI (Software, Platform, Infrastructure) framework for cloud computing. How does each layer support cloud services ? 7

   (b) What is virtualization at the infrastructurelevel ? Discuss the role of CPU virtualization and hypervisors in enabling cloud computing environments. 7

5. (a) Describe the cloud service delivery models (IaaS, PaaS, SaaS) and compare them with the traditional software models. Highlights at least *two* major differences. 7

   (b) Discuss any *three* key barriers to cloud computing adoption in enterprises. How can organizations address these challenges to successfully move to the cloud ? 7

Section C

6. (a) Explain the key aspects of infrastructure security in cloud computing at the network, host, application level. Why is multi-level security important ? 7

   (b) What is Identify and Access Management (IAM) in cloud computing ? Discuss two major IAM challenges and explain, how they impact trust boundaries. 7

7. (a) Identify and explain *three* key privacy concerns in cloud computing. How can cloud providers protect user privacy across the data life-cycle ? 7

   (b) Discuss the importance of security management standards in the cloud. How do legal and regulatory framework influence cloud security practices ? 7

Section D

8. (a) What is Governance, Risk and Compliance (GRC) in the context of cloud computing ? Explain, why GRC is crucial for internal policy and regulatory compliance. 7

   (b) Describe the role of Cloud Security Alliance (CSA) in auditing cloud environments. How does it help organizations ensure cloud compliance and security ? 7

9. (a) Explain the MapReduce programming model. Describe its key phases and how it simplifies data-intensive computations. Explain with a suitable example ? 7

(b) Discuss different technologies and storage systems used for data intensive computing. How do these systems support large scale data processing in the cloud ? 7

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