

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (S,FE) Examinations May 2026 (2019 Scheme)

Course Code: CDT401

Course Name: CONCEPTS IN CLOUD COMPUTING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- | | | |
|----|---|-----|
| 1 | Identify the most suitable cloud deployment model for a government agency seeking to host confidential citizen data while maintaining scalability. Justify your choice. | (3) |
| 2 | Illustrate the major differences between distributed computing and cloud computing. | (3) |
| 3 | Is Cloud computing possible without virtualization? Justify your answer. | (3) |
| 4 | Comment on the major methods for virtualizing I/O devices. | (3) |
| 5 | Name three core services offered by Amazon Web Services (AWS) that fall under the Infrastructure-as-a-Service (IaaS) category. | (3) |
| 6 | Comment on the need of standardization among cloud service providers. | (3) |
| 7 | Introduce Google's Bigtable and its uses. | (3) |
| 8 | Discuss whether a paradigm or a model exclusively for parallel programming is needed or not. Explain your reasoning. | (3) |
| 9 | Briefly explain the concept of cloud forensics and its different phases. | (3) |
| 10 | Discuss some of the security concerns specifically related to cloud computing. | (3) |

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

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|----|--|-----|
| 11 | a) Discuss the scope, architecture, advantages and disadvantages of the different cloud deployment models (Public clouds, Private clouds etc.) with the help of a diagram. | (8) |
| | b) Name the different classes of massive computing systems and describe one briefly. | (6) |

OR

- 12 a) Compare and contrast the three primary cloud service models (IaaS, PaaS, SaaS) based on the level of control, management responsibility, and flexibility offered to the user. (7)
- b) Discuss the key limitations of traditional computing architectures that acted as catalysts for the widespread adoption of cloud computing (7)

Module II

- 13 a) Compare full virtualization and para-virtualization, discuss the advantages and disadvantages of each. Explain how each method handles privileged instructions. (8)
- b) Illustrate the low-level Virtual Machine operations with the help of neat sketches. (6)

OR

- 14 a) Compare the three major VM architectures with the traditional physical machine with the help of a diagram. (7)
- b) Distinguish between Instruction Set Architecture (ISA) level and Hardware level implementations of virtualization. (7)

Module III

- 15 a) Compare the core services and target use-cases of any two of the following public cloud platforms: Amazon Web Services (AWS), Microsoft Azure, Google Clouds. (7)
- b) Discuss the concepts of Shared-nothing paradigm and Messaging-Based information exchange which are used by Nova (Compute component of Openstack). (7)

OR

- 16 a) Describe the various methods for provisioning resources in a cloud environment. For each method, provide a representative scenario that demonstrates its ideal application. (8)
- b) Comment on the following concepts related to Market-oriented cloud architecture: (6)
- Service-Level Agreement
 - Dispatcher
 - VM Monitor
 - Service Request Monitor

Module IV

- 17 a) Write the pseudocode for a MapReduce program to count the number of palindrome words in a text document. The word should have at least three letters. (8)

- b) **Briefly** explain the steps involved in reading a file from the HDFS system. (6)

OR

- 18 a) How has cloud computing transformed collaborative applications? Discuss any two examples such as collaborative task management, word processing or online scheduling. (7)
- b) Explain how the Twister model improves upon the traditional MapReduce framework to efficiently handle iterative computations and graph processing. (7)

Module V

- 19 a) Examine the major Cloud Security Challenges that are inherent to the multi-tenant and distributed nature of the cloud deployment model. (7)
- b) Discuss the specific security challenges related to Virtual Machine Security, and suggest mechanisms to mitigate them (7)

OR

- 20 a) Briefly explain about the baseline security practices that should be followed by a Software-as-a-service organization. (7)
- b) Describe the emerging trends in Security-as-a-Service (SECaaS) and discuss their impact on modern enterprises. (7)
