# PES University, Bengaluru

(Established under Karnataka Act 16 of 2013)

**END SEMESTER ASSESSMENT (ESA) - JULY - 2023**

**UE17CS352 - Cloud Computing**

**Total Marks : 100.0**

1.a. Explain the different deployment models of cloud computing. Give a real-time usage scenario for each deployment model. (7.0 Marks)

1.b. i) Explain REST operations.
ii) Explain distributed system model with an example (9.0 Marks)

1.c. List and explain the benefits of moving applications to the cloud. (4.0 Marks)

2.a. Explain docker architecture with a neat diagram (8.0 Marks)

2.b. Consider a situation where we you are required to apply any one of these types of virtualization
***Full Virtualization, Bare Metal virtualization, Host based virtualization and Para Virtualization***
to different implementation technologies. Mark the appropriate virtualization type for each requirement and justify your answer.

(i) Run some dedicated applications on the VMs created on the guest OS and run some other applications on the host OS directly
(ii) Run special APIs requiring substantial OS modifications in a VM
(iii) Run non-critical instructions on the hardware directly while critical instructions are discovered and replaced with traps into the VMM to be emulated by software.
(iv) Install the virtualization software directly on the hardware (8.0 Marks)

2.c. List any 2 similarities and any 2 differences between a Docker container and a VM. (4.0 Marks)

3.a. What does CAP theorem state? Briefly explain. Explain how would you choose a database for your application based on CAP theorem (8.0 Marks)

3.b. Illustrate the working of amazon simple storage service with respect to object storage (6.0 Marks)

3.c. Explain different types of multitenant architecture for database (6.0 Marks)

4.a.

i) Explain any four techniques that make DevOps a successful methodology to develop and deliver software?
ii) Explain resource allocation algorithm for storage

(10.0 Marks)

4.b. Explain kubernetes architecture with a block diagram and also functioning of each component. (10.0 Marks)

5.a. What is the purpose of Leader Election in Distributed computing? Explain the Ring election algorithm with neat sketches. What are the problems associated with this algorithm? Discuss the worst-case scenario and messages required in worst case scenario (10.0 Marks)

5.b. Explain the key benefits of Zookeeper. What are the common services offered by Zookeeper? (8.0 Marks)

5.c. How security is provided in cloud computing? (2.0 Marks)