



DECEMBER 2021: END SEMESTER ASSESSMENT (ESA) B TECH VI SEMESTER

UE18CS352 – CLOUD COMPUTING

Time: 3 Hrs

Answer All Questions

Max Marks: 100

1	a)	If you are required to build a Cloud-Ready Application, how will you go about designing and building a cloud application architecture for private or public clouds? Explain 5 key steps.	10 (2M X 5 steps)
	b)	Describe with the help of examples the various service models and deployment models of cloud computing.	7
	c)	Let's say you are designing a network application. List down the REST operations that you would use to (i) get all devices (ii) create a new device (iii) update the device ID of the existing device.	3
2	a)	(i) Explain any 2 advantages and any 2 disadvantages of UnionFS. (ii) Explain why DevOps is Needed? How is DevOps different from traditional software development and Operations process?	8 (4+4)
	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
	c)	List any 2 similarities and any 2 differences between Docker container and VM.	4
3	a)	Explain (4) Lustre file system architecture with a neat diagram (3).	7
	b)	Explain Leader based replication technique.	5
	c)	Which of following statements are True in partitioning by hash key? 1. Because of the risk of skew and hot spots, many distributed datastores use a hash function to determine the partition for a given key 2. A good hash function takes skewed data and makes it uniformly distributed 3. Using a suitable hash function for keys, you can assign each partition a range of hashes (rather than a range of keys), and every key whose hash falls within a partition's range will be stored in that partition.	3

	d)	Discuss 3 desirable properties of the CAP theorem and some of its practical implications.	5
4	a)	What is the purpose of Leader Election in Distributed computing (2)? Explain briefly Bully Algorithm and Modified Ring election (8).	10
	b)	Explain how Zookeeper works (5). Explain the key benefits of Zookeeper and the common services offered by Zookeeper (5)?	10
5	a)	Explain the terms mentioned below from a cloud security perspective <ol style="list-style-type: none"> 1. Cloud Time Service 2. Identity Management 3. Access Management 4. Break Glass Procedures 5. Key Management 	10 (2M X each term)
	b)	Explain the following Keystone concepts <ol style="list-style-type: none"> 1. Roles 2. Assignment 3. Targets 4. Tokens 5. Catalog 	10 (2M X each concept)