

MAY 2022: END SEMESTER ASSESSMENT B Tech CSE 6th SEMESTER

UE18/19CS352 – CLOUD COMPUTING

Time: 3 Hrs	Answer All Questions	Max Marks: 100
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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 4 key steps.	8
	b)	Describe with the help of examples various service models and deployment models of cloud computing.	7
	c)	Three applications are developed on the cloud – App1 is accessed using a browser on the cloud, App2 is installed on virtual machine and App3 is built using a cloud based database service. Classify the three apps into IaaS, PaaS and SaaS models with proper justification. Also, give a real life example of IaaS, PaaS and SaaS platform.	5
2.	a)	Consider a situation where 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 (4*2M)
	b)	Explain what are rings and what do the arrows in the following image represent?	5

	c)	What are controller-manager, kubelets and pods in Kubernetes? Explain with a diagram where each of them execute – on master or worker?	5
	d)	List one similarity and one difference between Docker container and a VM.	2
3.	a)	(i) Explain (5) Gluster file system architecture with a neat diagram (3). (ii) How does Gluster file system compare with Lustre file system in terms of metadata management?	10 (8+2)
	b)	Discuss 3 desirable properties of the CAP theorem and some of its practical implications.	5
	c)	What is a consistency model? Explain briefly any 4 types of consistency models.	5
4	a)	What is the purpose of Leader Election in Distributed computing? (2) Explain briefly Bully Algorithm and Leader election in a Ring (6)	8
	b)	What is the problem with the implementation of a distributed lock in the following diagram? Explain with a diagram the approach that is used to overcome the problem.	6 (2+4)
	c)	How does Zookeeper work? (3) What are the common services offered by Zookeeper ? (3)	6
5	a)	Explain the following terms from Cloud Threat and Security Context. (2 Marks each) 1) Domain in Keystone 2) Token In Keystone 3) DoS Attack 4) Honeypot design pattern	8
	b)	What is Cloud Bursting? Explain how Cloud Bursting can be Beneficial to Cloud Users.	6

	c)	<p>What is multi-tenancy and mention its benefits in Cloud Computing. (2 Marks)</p> <p>You are asked to design a multitenant database for two universities – HighTechUniv and GlobalUniv to store information about students. <i>HighTechUniv</i> wants to store USN, student names and email ids while <i>GlobalUniv</i> wants to store USN, student names and grades. Design a multitenant database using the preallocated column method for the same. (4 Marks)</p>	6
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