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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

April 2025 Semester End Make-Up Examinations

Programme: B.E. **Semester: VII**

Branch: Computer Science and Engineering **Duration: 3 hrs.**

Course Code: 22CS7PCCCT / 21CS7PECCT **Max Marks: 100**

Course: Cloud Computing

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	*CO*	*PO*	Marks
1	a)	A cloud computing platform is used by an organization for deploying their e-commerce website. However, when the server fails all its data is lost. Identify and explain any two cloud strategies used to overcome the data loss.	*CO3*	*PO 3*	**6**
	b)	Differentiate among different cloud deployment models using suitable diagrams and example scenarios.	*CO2*	*PO2*	**10**
	c)	Load balancing can route successive requests from a user session to different servers, maintaining the state or the information of a particular session might be a problem. Analyze and describe the different approaches that can be employed to solve this problem.	*CO3*	*PO3*	**4**
		OR			
2	a)	Justify how SDN architecture is beneficial compare to Conventional network architecture with a diagram.	*CO3*	*PO3*	**10**
	b)	Identify the cloud service models used in the following scenarios. Also, list out the benefits for an organization from the selected service model for the same: a. An organization wants to use a cloud service to build their software tool for internal applications. The service model must also provide provisions for testing the application. b. An organization has developed an application for tracking their customer's interests and wants to deploy the application on multiple servers using a cloud service. The service must provide an option for scaling up or down the different resources allocated.	*CO3*	*PO3*	**6**
	c)	Illustrate with suitable diagram how cloud computing is helpful in intelligent transportation system.	*CO2*	*PO2*	**4**

			UNIT - II			
	3	a)	Define virtual machine. Demonstrate the taxonomy of various virtual machines with necessary diagrams.	*CO2*	*PO2*	**8**
		b)	Differentiate between Full virtualization and Para virtualization technologies with neat diagrams.	*CO3*	*PO3*	**6**
		c)	Illustrate with a diagram how Xen hypervisor is beneficial.	*CO2*	*PO2*	**6**
			OR			
	4	a)	Examine the various problems faced by virtualization in x86 architecture.	*CO3*	*PO3*	**8**
		b)	Demonstrate the working of the KVM hypervisor with a diagram.	*CO2*	*PO2*	**6**
		c)	The binaries created by a compiler for a specific ISA and a specific operating system are not portable. Such code cannot run on a computer with a different ISA or on computers with the same ISA but different operating systems. Analyze and explain the solution offered by virtualization to solve the above problem.	*CO3*	*PO3*	**6**
			UNIT - III			
	5	a)	Cloud computing services are not limited to SaaS, PaaS or IaaS. They extend beyond this to provide various other useful services. Justify your answer.	*CO2*	*PO2*	**6**
		b)	Illustrate with a neat diagram, the infrastructure framework used for dynamic resource deployment in the cloud.	*CO3*	*PO3*	**8**
		c)	Differentiate between Infrastructure SLA and Application SLA.	*CO3*	*PO3*	**6**
			OR			
	6	a)	Cloud Infrastructure providers set up data centers in multiple locations to support large number of users. In-spite of this, providers may not be able to meet the QoS requirements of its users from locations across the world. Identify the solution for this problem and demonstrate the architecture used to implement the solution with a diagram.	*CO3*	*PO3*	**6**
		b)	A leading educational institution has automated its admission process and has decided to host the admission website on a cloud platform which will be governed by an SLA. Describe the various phases that an SLA goes through from creation to termination.	*CO2*	*PO2*	**6**
		c)	Identify and explain the various load balancing algorithms and admission control mechanisms used to provide guaranteed QoS for hosted web applications.	*CO2*	*PO2*	**8**

			UNIT – IV			
	7	a)	A financial organization has to move their finance application to cloud platform in order to compete in the market and get the benefits of the cloud. The application needs to be refactored to address scalability, reliability, availability and maintenance. Describe the different design considerations that need to be addressed for the given situation.	*CO2*	*PO2*	**8**
		b)	Describe the characteristics of ISO 9126 software quality standards with respect to the maintainability and portability of the software.	*CO2*	*PO2*	**6**
		c)	List and explain the characteristics any six cloud security design principles.	*CO3*	*PO3*	**6**
			OR			
	8	a)	With the help of neat diagrams, identify and demonstrate the functionality of components of the cloud reference architectures for the following applications: ➢ Banking, financial and B2B applications. ➢ Compute intensive, analytical applications.	*CO2*	*PO2*	**8**
		b)	Software assurance defines the level of confidence that the software is free from vulnerabilities, which are either intentionally or unintentionally inserted. Identify and explain the three most important pillars of cloud software assurance also called as the triad of information system security.	*CO3*	*PO3*	**6**
		c)	Analyze and differentiate among the following testing techniques used to improve the cloud software security: ➢ Source code fault injection ➢ Binary fault injection	*CO2*	*PO2*	**6**
			UNIT - V			
	9	a)	Describe the functionality of the following components in Kubernetes architecture with a diagram: a) Cluster c) Node e) Master b) Pod d) Label	*CO2*	*PO2*	**10**
		b)	Analyze and differentiate among Patchwork monoliths and Modular monoliths with respect to eCommerce platform.	*CO3*	*PO3*	**10**
			OR			
	10	a)	Illustrate how the event-driven micro-service architecture is helpful for an eCommerce platform with a neat diagram.	*CO2*	*PO2*	**10**
		b)	A Kubernetes cluster has several master components used to control the cluster. Illustrate with an example the role of the following components: a) Kubelet d) Scheduler b) Etcd e) Proxy c) Controller collection f) API server	*CO2*	*PO2*	**10**

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