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

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main 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)	Describe the usage of Cloud computing technology for the following applications. Apply the knowledge of Cloud service model and Cloud deployment model to identify suitable service model and deployment model for the following applications: • Cloud computing for Government • Cloud computing for Transportation system • Cloud computing for Health Care	*CO1*	*PO 1*	**10**
	b)	Demonstrate the various Load Balancing strategies used in cloud computing with a neat diagram.	*CO1*	*PO1*	**10**
		OR			
2	a)	By applying the knowledge of various Cloud service models, identify the benefits, characteristics and adoption levels of each cloud service model.	*CO1*	*PO1*	**10**
	b)	Analyze the type of billing service that can be opted by the customers for their following requirements: ➢ User needs want to use cloud resources for longer durations and want more control over the cloud expenses. ➢ User wants to use the cloud resources where pricing is driven by market demand. ➢ User wants to use the cloud resources for the short durations and he cannot predict the usage beforehand.	*CO2*	*PO2*	**5**
	c)	Identify the limitations of conventional network architecture and demonstrate how these limitations can be overcome by the SDN architecture with a diagram.	*CO2*	*PO2*	**5**
		UNIT - II			
3	a)	The libraries created by a compiler for a specific ISA and a specific OS are not portable, such code cannot run on a computer with different OS or different ISA. Analyze and explain the solution for the above problem with a neat diagram.	*CO2*	*PO2*	**10**

		b)	Demonstrate the working of Xen hypervisor with a neat diagram. Also show the setup for the performance comparison of a native Linux system and Xen systems.	*CO2*	*PO2*	**10**
			OR			
	4	a)	Differentiate among Full Virtualization, Para-Virtualization and Hardware-Assisted Virtualization.	*CO2*	*PO2*	**5**
		b)	List the characteristics of Process virtual machines and System virtual machines.	*CO2*	*PO2*	**5**
		c)	Demonstrate the functionality of Virtual machine monitors.	*CO2*	*PO2*	**10**
			UNIT - III			
	5	a)	**i)** BMS College of Engineering has decided to host its application on a cloud platform which is maintained by Google. This application has stringent monitoring requirements and an appropriate SLA needs to be designed and mutually agreed between BMSCE and Google. Illustrate the various stages that this SLA goes through from the contract definition till contract termination. **ii)** Given the below contractual components of the SLA, identify the type of SLA they belong to: **a.** The customer will be notified within 1 hour of complete downtime. **b.** The website response time is not more than 3 sec per user request. **c.** The average latency of the web server is the average of latencies of web server1 and web server2. **d.** The data center's network is available for 99% of the calendar month during core working hours. **e.** A penalty of Rs. 10000 to be charged for every SLO that is breached.	*CO2*	*PO2*	**10**
		b)	Demonstrate how distributed VMs can be managed and dynamically deployed for an application using InterGrid Managed Infrastructure. Explain the components and working with a diagram.	*CO2*	*PO2*	**10**
			OR			
	6	a)	An application is hosted on the cloud platform, which needs to be monitored using SLA. Illustrate with a flow diagram, the different activities performed under feasibility study and on-boarding phases of the application deployment.	*CO2*	*PO2*	**10**
		b)	Analyze the drawbacks of Static resource provisioning policies used in cloud. Describe how these drawbacks can be overcome by demand driven method and popularity method.	*CO2*	*PO2*	**5**
		c)	Demonstrate the usage of the six layers of extended cloud computing services along with the major providers with a diagram.	*CO1*	*PO1*	**5**

			UNIT - IV			
	7	a)	For the below the given application scenarios, identify the most appropriate cloud reference architectures. Also, explain the same with necessary diagrams. i) Indian Bank has designed a new Internet Banking application that provides end to end banking services to all its customers around the world. ii) IBM has developed a compute intensive application for analyzing the customer behavior and recommending the product of their interest.	*CO2*	*PO2*	**10**
		b)	List and elaborate all the design considerations for cloud Applications.	*CO2*	*PO2*	**10**
			OR			
	8	a)	Describe the various Cloud information security objectives.	*CO2*	*PO2*	**10**
		b)	Elaborate on various Cloud security design principles.	*CO2*	*PO2*	**10**
			UNIT - V			
	9	a)	Justify how Kubernetes is helpful in detail.	*CO2*	*PO2*	**10**
		b)	Demonstrate the usefulness of different components of Kubernetes with a diagram.	*CO2*	*PO2*	**10**
			OR			
	10	a)	Based on the functionality, analyze and compare Patchwork monoliths and Modular monoliths with a diagram.	*CO2*	*PO2*	**10**
		b)	Justify how SOA tries to build business functionality using reusable components with a diagram.	*CO2*	*PO2*	**10**

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