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

Autonomous Institute Affiliated to VTU

January / February 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)	Define Cloud Computing. List the five essential characteristics of Cloud Computing as identified by NIST Solution.	CO1	PO1	6
		b)	Apply the knowledge of Cloud service and Cloud deployment models to identify suitable service model and deployment model for the following applications: ➤ Cloud computing for Government ➤ Cloud computing for Manufacturing Industry	CO2	PO2	6
		c)	Analyze and differentiate among various replication approaches provided by cloud with the help of a neat diagram.	CO2	PO2	8
			OR			
	2	a)	By applying the knowledge of various Cloud service models, identify the benefits, characteristics and adoption levels of each service model.	CO1	PO1	6
		b)	Identify the problem in load balancing while handling session-based applications. Describe how these problems are overcome by various persistence approaches.	CO2	PO2	6
		c)	Justify how SDN architecture is beneficial compare to Conventional network architecture with a diagram.	CO2	PO2	8
			UNIT - II			
	3	a)	Differentiate among the following approaches in which virtualization can simulate the interface to a physical object: ➤ Multiplexing ➤ Aggregation ➤ Emulation ➤ Multiplexing with emulation	CO2	PO2	6
		b)	Describe the functionality of layering and interfaces among the software components and the hardware with a diagram.	CO2	PO2	6

	c)	Demonstrate the working of Xen VMM with a neat diagram.	CO2	PO2	8
		OR			
4	a)	Analyze and describe the taxonomy of Process virtual machines and System virtual machines with a diagram.	CO1	PO1	6
	b)	Differentiate between Full Virtualization and Para Virtualization with a neat diagram.	CO2	PO2	6
	c)	Identify the problems faced by virtualization of x86 architecture. Justify how these problems are solved through different mechanisms with the help of a neat diagram.	CO2	PO2	8
		UNIT - III			
5	a)	Illustrate with an example the different phases of SLA life cycle.	CO1	PO1	6
	b)	Differentiate between Infrastructure SLA and Application SLA.	CO3	PO3	6
	c)	Demonstrate how distributed VMs can be managed and dynamically deployed for an application using Inter-Grid Managed Infrastructure with a diagram.	CO3	PO3	8
		OR			
6	a)	Discuss the functionality of the six layers of extended cloud computing services along with the major providers with a diagram.	CO1	PO1	6
	b)	With a neat diagram show the interactions among VM managers for cloud creation and management and explain in detail.	CO3	PO3	6
	c)	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.	CO3	PO3	8
		UNIT - IV			
7	a)	List and explain various Defense in Depth cloud security design principles.	CO1	PO1	6
	b)	A cloud application was designed, developed and hosted on a cloud platform. After a certain period of time, the application was not able to deliver the intended services to its users. Also, the user's requests were not answered due to the application's unavailability. Analyze the various design considerations that the application designers must have considered before developing the application to avoid the problems mentioned above.	CO2	PO2	6
	c)	"Software Security Assurance State-of-the-art Report (SOAR) summarizes properties and behaviour for security testing verification". Justify your answer.	CO2	PO2	8
		OR			
8	a)	Identify and elaborate on the areas related to confidentiality which is one of the important pillars in cloud software assurance.	CO1	PO1	6

		b)	Analyze and discuss the various design consideration to be kept in mind if dynamic scaling is the important factor.	CO2	PO2	6
		c)	For the below given application scenario, identify the most appropriate cloud reference architecture. Justify your answer. Also, explain the same with necessary diagrams. ➤ Government of India has developed a new scheme for start-ups that helps many unemployed youths to think of bringing their ideas into reality. Government has planned to provide loans through their partner banks to the youths which they can pay as part payment.	CO2	PO2	8
			UNIT - V			
	9	a)	Demonstrate with a neat diagram the second step in migrating the reporting service to an event-driven architecture.	CO1	PO1	10
		b)	Kubernetes API is important? Justify your answer.	CO2	PO2	10
			OR			
	10	a)	Based on the functionality, differentiate among the following components of Kubernetes architecture with a diagram. ➤ Clusters ➤ Nodes ➤ Namespace ➤ Labels	CO1	PO1	10
		b)	Identify the architecture that is similar to event-based architecture but is built using reusable components and communicates through a decoupled medium like network or service bus and with a neat diagram show the typical organization of the same and explain.	CO2	PO2	10
