

UNIT IV: NETWORKING FOR CLOUD COMPUTING & DATA CENTERS

Short Questions

S.No	Questions	BT	CO	PO
1	Why is custom networking critical in a Cloud Computing environment?	L2	CO4	PO1
2	What are the core architectural building blocks of a modern Data Center Environment?	L1	CO4	PO1
3	State two major networking performance issues encountered in Data Centers.	L1	CO4	PO2
4	What is the significance of the Transport Layer in Data Center Networks (DCNs)?	L2	CO4	PO1
5	Define what a Data Center Network Architecture (DCN) is.	L1	CO4	PO1
6	What is TCP Incast congestion problem in data centers?	L2	CO4	PO2
7	List out three market-leading public Cloud Service Providers (CSPs).	L1	CO4	PO1
8	Define the concept of "Software Defined Networking (SDN)" in cloud infrastructure.	L1	CO4	PO1
9	What is the purpose of Top-of-Rack (ToR) switches in data center layouts?	L1	CO4	PO1
10	What is Bisection Bandwidth and why does it matter for data center scaling?	L2	CO4	PO1

Long Questions

S.No	Questions	BT	CO	PO
11	a) Provide a detailed introduction to cloud networking. Explain how data center links handle internal (East-West) and external (North-South) traffic profiles.	L2	CO4	PO1
	b) Describe the physical layout, power considerations, and structural environment of a modern hyperscale Data Center.	L2	CO4	PO1
12	a) Analyze the prominent networking issues in Data Centers, focusing specifically on packet delays, oversubscription, and bottleneck links.	L4	CO4	PO2
	b) Explain the structural architecture of traditional multi-tier (Three-Tier) and modern Fat-Tree Data Center Network structures.	L2	CO4	PO1
13	a) Discuss the Transport Layer Issues in Data Center Networks (DCNs). Detail how standard TCP fails under extreme low-latency data center flows.	L4	CO4	PO2
	b) Evaluate the technical solutions used to mitigate Data Center TCP (DCTCP) issues and transport link throughput drops.	L3	CO4	PO3
14	a) Compare the core cloud network infrastructures and connectivity options provided by major Cloud Service Providers like AWS, Microsoft Azure, and Google Cloud.	L4	CO4	PO2
	b) Explain how Network Function Virtualization (NFV) and virtual switches (vSwitches) isolate tenant communications inside a shared hardware platform.	L2	CO4	PO1
15	a) Elaborate on the design principles of high-performance Data Center Networks, explaining path routing optimization and link aggregation.	L2	CO4	PO1
	b) Analyze how server virtualization adds pressure on the data center network layer, and explain how overlay networks (e.g., VXLAN) resolve it.	L4	CO4	PO3