Reg. No.																

Question Paper Code	13933

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

Seventh Semester

Computer Science and Engineering

20CSEL702 - SOFTWARE DEFINED NETWORKS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Which of the following best defines Software Defined Networking (SDN)? (a) Network controlled by hardware switches only (b) Network that separates control and data planes (c) Network without routers (d) Network using only IPv6	1	K1	CO1
2.	The main function of the control plane in SDN is to: (a) Forward data packets (b) Manage routing and decision-making (c) Connect servers to switches (d) Increase bandwidth	1	K1	CO1
3.	Network virtualization separates (a) Users from OS (b) Physical from virtual (c) Hosts from data (d) Firewalls from routing	1	K1	CO2
4.	Which element controls SDN devices? (a) Proxy (b) Host (c) Controller (d) Switch	1	K1	CO2
5.	Which language is MOST commonly used to develop SDN applications with Ryu? (a) C++ (b) Python (c) Java (d) COBOL	1	K1	CO3
6.	Which of the following is NOT an SDN controller? (a) ONOS (b) Floodlight (c) Cisco IOS (d) Ryu	1	K1	CO3
7.	What is the main purpose of tunneling technologies in data centers? (a) To increase physical cabling (b) To encapsulate network traffic between endpoints (c) To reduce IP addresses (d) To enhance power consumption	1	K1	CO4
8.	Service provider networks require: (a) Scalability (b) Security (c) Automation (d) All of the above	1	K1	CO4
9.	Which SDN approach balances flows across multiple links? (a) Load sharing (b) Multipath routing (c) Flow balancing (d) ECMP	1	K1	CO5
10.	Which SDN property ensures consistent policy across domains? (a) Unified control (b) Policy consistency (c) Global policies (d) Intent control	1	K1	CO5

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	Define packet switching.	2	K1	CO1
12.	Differentiate between autonomous and dynamic forwarding tables.	2	K2	CO1
13.	What is meant by network virtualization?	2	K1	CO2
14.	Differentiate between SDN operation and legacy mechanisms.	2	K2	CO2
15.	What is the function of an OpenFlow switch?	2	K1	CO3
16.	Define flow entries in OpenFlow.	2	K1	CO3
17.	Define Network Functions Virtualization (NFV).	2	K1	CO4
18.	Outline the limitations of overlay networks when compared to SDN.	2	K2	CO4
19.	Differentiate between reactive and proactive applications.	2	K2	CO5
20.	Infer the significance of SDN in cloud service providers.	2	K2	CO5

21.		Recall any five security applications of SDN.	2	K1	CO6
22.		State any two programming techniques applied to SDN.	2	K1	CO6

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Apply the concept of packet switching to modern data center networks and illustrate its role in efficient data transmission.	11	K3	CO1
		OR			
	b)	Make use of SDN principles to design a simple cost-efficient data center network architecture and justify your design choices.	11	K3	CO1
24.	a)	Compare traditional networking mechanisms with SDN operation and evaluate the benefits of centralized control.	11	K4	CO2
		OR			
	b)	Explain the evolution of networking technologies leading to SDN and analyze how legacy systems evolved into programmable networks.	11	K4	CO2
25.	a)	Discuss the limitations of OpenFlow-based SDN and propose possible improvements.	11	K2	CO3
		OR			
	b)	Explain in detail about Open SDN, SDN via APIs.	11	K2	CO3
26.	a)	Explain about the tunneling technologies used in data centers and show how they enable communication between virtualized network components.	11	K2	CO4
		OR			
	b)	Discuss the importance of consistent policy configuration in SDN-based networks. How does it contribute to unified network control?	11	K2	CO4
27.	a)	Develop the process for creating network virtualization tunnels in SDN. How does it improve scalability and resource allocation?	11	K3	CO5
		OR			
	b)	Identify and discuss the advantages of proactive SDN applications in modern data centers.	11	K3	CO5
28.	a)	Analyze the segregation of IPsec traffic in mobile networks using SDN.	11	K4	CO6
		OR			
	b)	Examine the integration of SDN with IoT networks and its challenges.	11	K4	CO6