VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 13001

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024
Eighth Semester
Computer Science and Technology
U19CTE20 – SOFTWARE DEFINED NETWORK
(Regulation 2019)

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Why is software defined network important?	2	K1	CO1
2.	How data plane is different from control plane?	2	K2	CO1
3.	What is flow table? Point out the flow entries of flow table.	2	K1	CO2
4.	Differentiate between convergence time and load balancing in SDN.	2	K2	CO2
5.	Why is virtualization important in a multitenant data centre?	2	K2	CO3
6.	Draw the NVGRE packet format.	2	K2	CO3
7.	List out the applications of network function virtualization.	2	K1	CO4
8.	Compare Northbound APIs with Southbound APIs.	2	K2	CO4
9.	Define IETF SDN Framework.	2	K1	CO5
10.	What is a floodlight controller?	2	K1	CO5

PART – B

Q.No.		Questions	Marks	KL	CO
11.	a)	Explain traditional switch architecture with neat diagram.	13	K2	CO1
		(OR)			
	b)	Illustrate working principles of SDN with its architecture.	13	K3	CO1
12.	a)	Describe the following open flow specification in detail.		K2	CO2
		i. Open flow overview	7		
		ii. Open flow 1.0	6		
		(OR)			
	b)	i. Discuss SDN via opening up the device.	7	K2	CO2
		ii. Explain the general concepts of SDN Controllers.	6		
13.	a)	Demonstrate virtualized multitenant data centre with its architecture.	13	K2	CO3
		(OR)			
	b)	Explore the impact of SDN solutions for the data center network with network overlays.	13	K2	CO3
14.	a)	i. Describe some of the current languages and tools used in SDN programming.	8	K2	CO4
		ii. Write short notes on composition of SDN.	5		
		(OR)			
	b)	How can organizations effectively implement network function virtualization to enhance the performance and manageability of their network infrastructure? Demonstrate with its working architecture.	13	K3	CO4
15.	a)	Illustrate Juniper SDN framework with proof-of-concept application.	13	K3	CO5
		(OR)			
	b)	Explain open daylight idealized controller with its architecture.	13	K2	CO5

PART – C

Q.No.	Questions	Marks	KL	CO
16. a)	Explain how the concept of bandwidth calendaring operates within the context of Software-Defined Networking. Illustrate the significance of bandwidth calendaring in SDN by examining its application in both base and OpenFlow network topologies.	15	K3	CO5

<div align="center">(OR)</div>

b)	How can the application of data center orchestration, encompassing the creation of tenant and virtual machine states, forwarding states, and data-driven learning, be effectively applied to solve complex challenges in SDN? Apply your understanding to illustrate practical scenarios where these components of data center orchestration are utilized.	15	K3	CO5

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Eighth Semester
Computer Science and Technology
U19CTE20 / U19CTV44 – SOFTWARE DEFINED NETWORK
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Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

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	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Why do we need Software Defined Networking (SDN)?	2	K1	CO1
2.	State any two desirable characteristics of data centers.	2	K2	CO1
3.	What are the roles of SDN Controllers?	2	K4	CO2
4.	State any two drawbacks of Open SDN.	2	K4	CO2
5.	State the categories of the data centers.	2	K4	CO3
6.	What is VLAN exhaustion?	2	K1	CO3
7.	What is Failure recovery in SDN via overlays?	2	K3	CO4
8.	Is SDN used by Google?	2	K6	CO4
9.	What is bandwidth calendaring?	2	K5	CO5
10.	What is Data Center Orchestration?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	With a neat block diagram, explain the functions of a traditional switch architecture of SDM.	13	K1	CO1

			(OR)			
	b)		Describe hardware forwarding and control in Software with a proper example and how does SDN attempt to segregate network activities.	13	K2	CO1
12.	a)		Describe the process of creating a new network instance using multiple Hypervisors with an illustrious example.	13	K3	CO2
			(OR)			
	b)		Describe Multipath transmission through a network of resources in SDN and illustrate it with a case study.	13	K2	CO2
13.	a)		Describe VXLAN packet format and explain how it is used in the tunneling protocols.	13	K2	CO3
			(OR)			
	b)		Describe the shortest path bridging for Q-in-Q and also for MAC-in-MAC.	13	K4	CO3
14.	a)	i.	Explain the composition of a SDN with an example.	6	K3	CO4
		ii.	What is the use of northbound application programming interface? Explain.	7	K3	
			(OR)			
	b)		Discuss in brief about the various factors to be considered in programming SDNs.	13	K2	CO4
15.	a)	i.	Describe Open Daylight Controller.	5	K2	CO5
		ii.	Illustrate the Juniper SDN Framework in detail.	8	K3	
			(OR)			
	b)	i.	Describe Floodlight Controller.	5	K2	CO5
		ii.	Illustrate the IETF SDN Framework in detail.	8	K3	

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Describe. WAN Network Virtualization – SD-WAN in detail and how is the agile development methodology adopted in SDN Application development lifecycle.	15	K4	CO4
		(OR)			
	b)	Illustrate proactive SDN application design in detail and describe the open challenges that need to be addressed to execute hybrid models on it.	15	K4	CO3