Reg. No.

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

VII SEMESTER B.TECH. (INFORMATION TECHNOLOGY/COMPUTER COMMUNICATION ENGINEERING)

END SEMESTER EXAMINATIONS, NOVEMBER 2017

SUBJECT: PROGRAM ELECTIVE-V SOFTWARE DEFINED NETWORKS [ICT 4004]

REVISED CREDIT SYSTEM
(25 / 11 /2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer ALL the questions.
- Missing data, if any, may be suitably assumed.

1A.	A network provider is deploying policies BLOCK to the infected host into the SDN enabled data center whenever he finds a DoS attack in one of the node in his network. But he finds that network performance is not improved after deploying the policies. He is not sure about the policies deployed are doing the changes correctly or not. Give and explain solutions that verify the program will make changes correctly.	5
1B.	Assume a valiant load balancing routers with one intermediate switching stage and five servers, each with 1 Mbps ports. Calculate the required per-server processing rate	3
1C.	Explain any four problems with current OpenFlow hardware that motivated a custom OpenFlow chip design.	2
2A.	A network designer is seeking a solution to quickly deploy the policies into the network components. From survey he identified that SDN with a good controller will fulfill his requirements but he is not having any knowledge of a controller. He is expecting a controller with GUI support with good performance and also it should have support for cloud. Which controller do you suggest him? How your suggestion does helps to fulfill his requirements?	5
2B.	Write a POX learning algorithm for switch using mininet.	3
2C.	What are some of the features that an SDX enables that today's IXPs cannot support?	2
3A.	Assume that there are two storage servers deployed in a private network. Clients will send the data to the gateway of the private network. Write a sequential policy to share the load between two storage servers at gateway assuming that gateway is SDN enabled.	5
3B.	A cellular network provider is willing to offer different types of application for his user. Explain how SDN helps him to provide different application with desired QoS.	3

3C.	What is network slicing? Explain how slicing helps in network management?	2
4A.	It is observed that OpenFlow will provide only match and action on the packets that it receives at the data plane. Network operator needs more sophisticated packet processing in the data-plane such as transcoding, encryption. It is also observed that customized hardware cannot support this requirement. Give and explain an appropriate SDN programmable data plane solution to support network operator requirements.	5
4B.	Explain Flow Mode and NETCONF operation of an OpenFlow protocol.	3
4C.	Write any two differences between centralized and distributed control plane.	2
5A.	What is network virtualization? What is the role of SDN in network virtualization?	5
5B.	What are the drawbacks of BGP protocol? How does SDN overcomes the problems associated with BGP?	3
5C.	Suppose that an operator of a home network wants to write the following policy: 1. Block all traffic to Facebook from my child's computer. 2. Rate limit BitTorrent traffic from my child's computer if the VoIP client on my desktop is active. And assume that "facebook" represents Facebook IP addresses, that "bittorrent" represents BitTorrent ports, and that "limitifVOIP" is a dynamic policy that checks a Resonance-like state machine to determine whether VOIP traffic has recently been observed. Write a sequential / parallel policy to satisfy this requirement.	2