



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

MAKEUP EXAMINATIONS, DECEMBER 2018

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

REVISED CREDIT SYSTEM  
(31/12/2018)

Time: 3 Hours

MAX. MARKS: 50

#### Instructions to Candidates:

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

- 1A. What is Network Function Virtualization (NFV)? With an appropriate example explain the role of SDN in NFV. 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 the features of a POX controller. 2
- 2A. Explain the features that benefits IXP using SDN. 5
- 2B. Assume that two storage servers are deployed in a private network. Clients will send the data to the gateway of the private network. Write sequential policies to share the load between two storage servers at gateway assuming that gateway is SDN enabled. 3
- 2C. What are the motivations for applying software defined networking in datacenters? 2
- 3A. Explain how switch blade helps to meet programmable data plane requirement of SDN. 5
- 3B. Write the Mininet command  
 i. To view the MAC address of a node  
 ii. To connect the controller running at remote location.  
 iii. To disable the switch port 3
- 3C. Explain any three benefits of deploying SDN in Virtual networks. 2
- 4A. With an appropriate figure, explain the steps involved in deploying the dynamic policies. 5
- 4B. What is a northbound API? What are some examples of tasks that a northbound API can perform with respect to SDN? 3

- 4C. Write a Mininet code in python to generate a topology for the figure shown in Fig. Q.4C. 2
- 5A. Write SDN policy to logically slice the network of Fig. Q.4C based on application using *dpctl* commands. The first slice with 10 Mbps is used to forward the video traffic from h1 to h3, whereas second slice with 1 Mbps for other traffic from h2 to h4. Assume video traffic is identified using port number 80. 5
- 5B. With an appropriate example, explain parallel and sequential policy composition. 3
- 5C. What are the steps involved in learning the network process used by the PortLand's Fabric Manager (FM)? 2

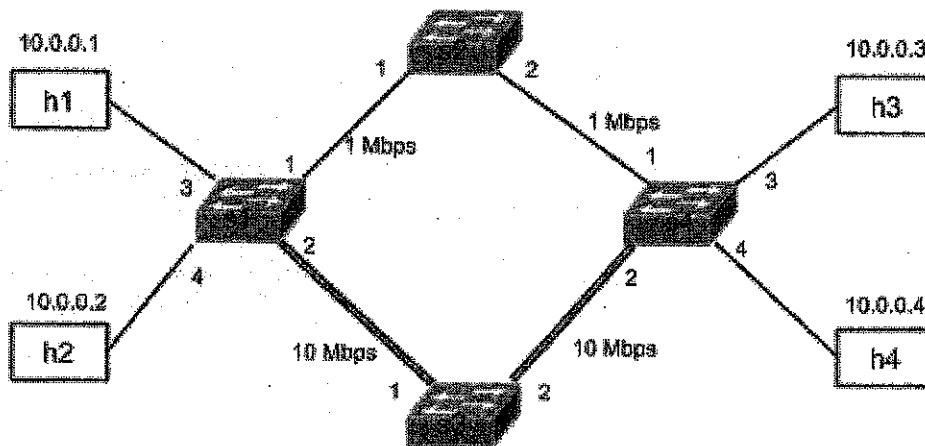


Fig. Q.4C