Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institute of MAHE, Manipal

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

END SEMESTER EXAMINATIONS, APRIL 2018

SUBJECT: PROGRAM ELECTIVE III - CLOUD COMPUTING [ICT 4017]

REVISED CREDIT SYSTEM
(26/04/2018)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer ALL questions.
- Missing data may be suitably assumed.

1A. With a neat diagram explain the techniques that support memory over-commitment in hypervisor. 5

1B. Identify and explain the storage virtualization mechanism that is recommended when there is large amount of data on the LUN in the storage system. 3

1C. Write the significance of the following in the cloud environment 2
i. Extra-territorial access
ii. Data residency issues

2A. What is the significance of virtual infrastructure management? With a suitable example explain the key functions of unified management software to create cloud services. 5

2B. In a cloud environment the data is transferring between two hosts at 6 AM with an average rate of 15 Kbps bandwidth. Such bandwidth is increased more than an average rate to 20 Kbps after one minute. Further at 6:12 AM, bandwidth is increased to 30 Kbps (peak bandwidth) for next three minutes. What is the burst size at 6:14 AM? How long the burst can stay if the data rate is 3.0 Kbps? 3

2C. Explain the significance and features of Enterprise Service Bus in Service Oriented Architecture 2

3A. Define virtual provisioning. With the help of a neat diagram explain how virtual provisioning can be implemented at storage layer and compute layer. 5

3B. Write a Python/Java program to display the welcome message along with current time for developing and hosting web application in Google App Engine. Such 3

deployed application should accept the connection only from *.edu

3C. An administrator has configured the following share values for different types of traffic at the distributed virtual switch: Virtual machine traffic: 3000, IP storage traffic: 1000, Virtual machine migration traffic: 2000 and Management traffic: 1000. The available network bandwidth is 10Gb/s and the listed traffic types contend for the bandwidth. How much bandwidth will be allocated to the virtual machine traffic? 2

4A. Explain the detailed steps involved in configuring Virtual Local Area Network (VLAN). Draw a neat diagram for the scenario given below to demonstrate VLAN trunking. Consider a scenario where an organization has three physical servers with hypervisor. Virtual machine VM1, VM2, and VM3 reside in a physical server PS1, virtual machine VM4 and VM5 are hosted on physical server PS2 and virtual machine VM6 is placed on physical server PS3. Each physical server has a virtual switch. These virtual switches are connected to a common physical switch to enable network traffic flow between them. VMs are connected to the respective virtual switches. The organization has to set up four functional groups, each group with unique VLAN ID. 5

Marketing group: Includes VM1, VM4 and VM6
Production group: Includes VM2, VM3 and VM6
Service group: Includes VM2 and VM5
Finance group: Includes VM3

4B. With a neat diagram explain any two different access control mechanisms that can be used to secure the information in the cloud 3

4C. With the suitable example explain how cloud governance help user and cloud service provider. 2

5A. Explain how data privacy and ownership are key security concern in cloud? Explain any four key security threats and its mitigation techniques for cloud infrastructure. 5

5B. What are the different compute based replication techniques involved in business continuity technology to protect the data in the cloud. 3

5C. Explain any four classes that are involved to create a simple application in CloudSim 2