B.Sc. Engg. SWE 5th Semester — 27 February 2020 (Morning)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION — **WINTER SEMESTER, 2019-2020**

DURATION: 1 Hour 30 Minutes — **FULL MARKS: 75**

CSE 4559: Introduction to Cloud Computing

Programmable calculators are not allowed. Do not write anything on the question paper.

There are **4 (four)** questions. Answer any **3 (three)** of them.

Figures in the right margin indicate marks.

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1 a) What are the characteristics of Cloud Computing given in NIST's definition, which one do you think is most important? Which core technologies can help to achieve the characteristic? and which issues would damage it? (if any). 10

b) What is Virtualization? Differentiate between full virtualization and para virtualization. 6

c) Suppose you have a host machine that has 64 GB RAM and you are trying to create VMs that requests 4 GB RAM but only uses 2.5 GB RAM. Calculate the amount of memory that will be saved if the concept of memory overcommit is used. 4

d) Describe the different Cloud Service Models. 5

2. a) What is Cloud Computing? What are the benefits of Cloud Computing? 7

b) Write short notes on the followings: 4+5

i. Transparent Page Sharing
ii. Cloud Deployment Models
iii. Issues of Cloud Computing

c) Explain the risk from multi-tenancy with respect to various cloud environment. 4

d) What is Fault tolerance? What are the techniques to enhance fault tolerance in Cloud Computing? 5

3. a) What is the difference between scalability and elasticity? 5

b) Define Service Oriented Architecture SOA. Depict a SOA communication between the service provide and service consumer using a SOAP Architecture. 8

c) Elaborate on the following quote from Larry Ellison, Oracle Corporation CEO; 4
"We've redefined Cloud Computing to include everything that we already do. I don't understand what we would do differently other than change the wording of some of our ads."

d) Differentiate between Grid Computing, Distributed Computing, Cluster Computing and Cloud Computing. Also draw the relationship between them. 8

4. a) What is Load Balancing? What is the importance of Load Balancing? With the help of an architectural diagram, explain how Load Balancing is achieved by the cloud controller. 10

b) Explain how the different emulation methods (Interpretation, Static and Dynamic translation) of instructions works in a virtual environment. 6

c) Elaborate on the following type of VM migration. Discuss their downtime and migration duration. 9

i. Stop-and-copy (S-C)
ii. Demand-migration (D-M)
iii. Iterative precopy (I-P)