

Nirma University

Institute of Technology

Semester End Examination (IR), May - 2019

B. Tech. in Computer Engineering / Information Technology, Semester-VI
IT662 Cloud Computing

Roll/
Exam No

Supervisor's initial
with date

Time : 3 Hours

Max Marks: 100

- Instructions :
1. Attempt all questions.
 2. Figures to right indicate full marks.
 3. Use section-wise separate answer book.
 4. Draw neat sketches wherever necessary.
 5. Assume necessary data wherever required.

SECTION-I

50 marks

Q.1 Do as directed.

[16]

A Justify the statement: "We can track the roots of cloud computing by observing the advancement of several technologies". Identify what technologies are responsible for the advent of cloud computing. (8)
CO1BL2

B Match the following Cloud services to their respective service-content. (8)
CO3BL3

- | | |
|-----------|---|
| i) SaaS | a) Programming Languages, Mashups editors, Structured data. |
| ii) PaaS | b) Compute Servers, Firewall, Load balancer, Data storage. |
| iii) IaaS | c) Social Network, CRM, Office Suite. |

Also, mention the usages and responsibilities of the hypervisor in cloud environs.

Q.2 Do as directed.

[20]

A Elucidate a scenario in cloud computing, where VM provisioning can be the last option to choose. Also, mention the lifecycle of the VM. (06)
CO4BL4

B ANEKA is essentially an implementation of the PaaS model, and it provides a runtime environment for executing applications by (06)
CO2BL2

leveraging the underlying infrastructure of the Cloud. Mention how the services; such as the Execution Services, Foundation Services and Fabric Services of ANEKA will characterize the ANEKA's container.

OR

B As a Cloud service provider what challenges you will face with (06)
CO2BL2 respect to fault tolerance and dynamic resource allocation.

C What is live migration? And how come it is related to high (08)
CO4BL1 availability in the cloud computing environment? Mention the various steps associated to live migration.

Q.3 Answer the following. [14]

A Why there is a need for resource management and energy efficiency in (08)
CO4BL6 a cloud computing environment? Justify your answer with two scenarios, one associated with resource management and the other should be associated with energy efficiency.

B An increasing number of organizations in industry and business (06)
CO2BL3 sectors adopts Cloud systems. Answer the following questions regarding Cloud computing.

- i) List and describe the main characteristics of the Cloud Computing systems.
- ii) Discuss the different ways for Cloud Service Providers (CSP) to maximize their revenues.

OR

B How trust overlay supports the trusted cloud services for creating (06)
CO2BL3 trust relationships among the data center modules?

Section-II

50 marks

Q.4 Do as directed. [18]

A Identify any 2 performance metrics for the following services (10)
CO1BL3 i) Network Capacity Metrics
ii) Storage device capacity Metrics
iii) Web application capacity metrics

How these metrics can be used with the operational policies for Capacity Management?

B Identify the cases/scenarios where the cloud resources can be (08)
CO2BL2 classified as

- i) Under-provisioning
- ii) Over-provisioning

Discuss different types of SLAs along with their Key components.

Q.5 Answer the following.**[20]**

- A** State True or False with proper justification:- (08)
- CO2BL5 i) Cloud consumer and cloud providers typically use the LAN (Local Area Network) to communicate, which is based on the decentralized provisioning and management model and is not controlled by any centralized entities.
- ii) A data center is a specialized IT infrastructure that houses a centralized server and databases only.
- iii) The elastic characteristic represents the ability of a cloud to transparently and automatically scale IT resources out or in.
- iv) A private cloud is owned by an individual organization and resides outside the organization's premises.
- B** Describe the following techniques or terminologies used in cloud computing and cloud services. Use a concrete example of a cloud or case study to explain the addressed technology. (06)
- CO3BL4 i) Load Balancing
- ii) Auto-scaling of cloud resources

OR

- B** Examine the usages of the following keywords, with respect to the policy-based management system. (06)
- CO2BL6 i) Provisioning Engine
- ii) Optimization Engine
- iii) Rule engine
- iv) Monitoring system
- C** Justify the statement: "MapReduce is a software framework for solving many large scale computing problems". Illustrate the same by using the example of the *wordcount*. (06)
- CO1BL3

Q.6 Do as directed.**[12]**

- A** How capacity management is associated with SLA (service level agreements) commitments? (05)
- CO4BL5
- B** Categorize the different phases of SLA management based upon their activities performed. Also, design the flowchart of the SLA management in the cloud. (07)
- CO2BL3

OR

- B** Justify the statement: Admission control algorithms play an important role in deciding the set of requests that should be admitted into the application server when the server experiences "very" heavy load. Mention various types of algorithms that are useful in the said scenario. (07)
- CO2BL3
