CLOUD COMPUTING
(CSEN 3235)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

(i) Which of the following benefit is related to create resources that are pooled together in a system having multi-tenant usage?
(a) Dynamic requirement (b) On demand Self-service
(c) Ubiquitous (d) Broad Network Access.

(ii) Which of the following architectural standards is working with cloud computing industry?
(a) REST (b)NIST (c) XML (d) SOA.

(iii) _____ feature in Cloud, allows you to optimize your system and capture all possible transactions.
(a) Reliability (b) Scalability
(c) Elasticity (d) Availability.

(iv) Which of the following lets a Web service advertise itself in terms of a collection of endpoints?
(a)SOAP (b) CHAP (c) SLA (d) WSDL

(v) Which of the following runs on Xen Hypervisor?
(a) AWS EC2 (b) VMWare
(c) Azure (d) Hyper-V

(vi) Which of the following cloud computing infrastructures automatically manage your capacity?
(a) Small Instance (b) High-Memory Extra Large Instance
(c) High-CPU Extra Large Instance (d) Reserved Instance.

(vii) AMIs are operating systems running on the _____ virtualization hypervisor
(a) Hyper-V (b) Xen (c) VMWare (d) Denali

(viii) Which of the following is used to aid in locating services in SOA?
(a) Data bus (b) Data management services
(c) Data abstraction services (d) Catalog service.

(ix) _____ authentication requires the outside use of a network security or trust service.
(a) Multi Factor (b) Single Sign-on
(c) Single Factor (d) Role based.

(x) Which of the following instance has an hourly rate with no long-term commitment?
(a) Spot Instance (b) Dedicated Instance
(c) Reserved Instances (d) On-Demand Instance.

Group – B

2. (a) Critically comment on the following:
(i) Elasticity and Scalability are two opposite concepts.
(ii) Cloud is considered to be a Utility due to its ubiquitousness.

(b) Explain the utility of different actors in NIST reference architecture with usage scenarios.

(c) How does SLA help in service quality maintenance?

(2 + 2) + 6 + 2 = 12

3. (a) Explain Hybrid deployment model of cloud.

(b) Consider the following Scenario:
An Educational and Research organization is interested to install cloud. The stakeholders are Professors, Research Fellows and Students. Professors share study materials and take online exams. Research fellows execute complex algorithms. Students discuss doubts in forums and submit assignments online.
Answer the following Questions:
(i) Which deployment model is suitable? Why?
(ii) What are the aspects you have considered while choosing it?

(c) What is the main purpose of having a Cloud cube model? What do you mean by sourcing in the cloud cube model?

(d) What is device diversity? How does the cloud support it as per the reference model?

1 + (1 + 2 + 2) + (1 + 2) + (1 + 2) = 12

Group – C

4. (a) What is the purpose of having the User management component in PaaS core Middleware?

(b) How Accessibility and Portability can be achieved in IaaS? What is Server consolidation? How is it achieved?

(c) Company ABC is incepted as a SaaS solution provider. They are currently dedicated to providing the solution to a Bank account management system. For the scenario answer the following:
Which of the Private or Public Cloud is recommended in this scenario? Or it has to be something else? Why?
What are the effective set of QoS parameters to be mentioned in SLA?

2 + (2 + 1 + 1) + 6 = 12

5. (a) What are the many challenges faced by SOA? How these issues get solved? Why REST's performance is better than SOAP?

(b) Consider the problem scenario:
A Healthcare Solution provider wants to have Cloud set up for offered services. Set of Services offered for different roles are given as
Doctors: Appointment, Patient's information view, prescription generation, test report view,
Health person: Symptom collection, information update, booking appointment, Prescription View, Payment receive
Administration: Success Report Generation, Doctor Information search, Health person Information search.
What are the relevant set(s) of SLA parameter(s) for each of the services? Justify your answer.

(2 + 2 + 2) + 6 = 12

Group – D

6. (a) How Virtualization makes cloud a Utility?

(b) Which products from Amazon are relevant with the following scenario and Why:
(i) One user needs an application for watermarking his images and archive those monthly.
(ii) One consumer wants to monitor the performances for the subscribed services over various Calender months.

(c) Explain Execution Environment Virtualization with a diagram. Why the Interpreter Routines are there in VMM? Why XEN is considered to implement paravirtualization?

2 + (2 + 2) + (3 + 2 + 1) = 12

7. (a) In the Amazon Web Services ecosystem, what are the different types of services available? Give an example of each type of service.

(b) Critically Comment: On-Demand EC2 Instances are costlier than Spot Instances.

(c) Consider the problem scenario:
An online shopping (Garments and Gift items) website has been very popular in India. They are using popular service offerings from Amazon for their hosting.
Answer the following:
(i) What is the most important SLA parameter to consider according to you? Why?

(ii) What kind of instances should be suitable for this shopping website, particularly for India? Why?

(2 + 2) + 2 + (1 + 2 + 1 + 2) = 12

Group – E

8. (a) How Encryption is used in the cloud for protection? Is it preventing data loss?

   (b) Explain Security Boundaries with a suitable diagram.

   (c) What is the role of a Cloud broker in Access Management? What is OAuth? How does it work? What is Privacy?

(3 + 2) + 3 + (1 + 1 + 1 + 1) = 12

9. (a) Name three goals of GFS for acceptability in the Cloud. Explain Garbage Collection in GFS.

   (b) What do you mean by Compliance?

   (c) Explain, with the help of schematic diagram(s), how chunks are handled during reading/write operations involving Client, Master, and Chunk-server in a GFS environment.

   (d) Critically Comment: GFS and HDFS both support Multiple writers, the multiple reader model.

(3 + 2) + 2 + 3 + 2 = 12

Department & Section	Submission Link
CSE	https://classroom.google.com/c/Mjk5NTgxMzI2MjUy/a/MzY0NTAzNjU0OTcz/details