

7. (a) What are the goals of GFS? 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 read/write operations involving Client, Master and Chunk-server in a GFS environment.
 (d) Critically comment: OpenID tells how authentication process will work.

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

Group - E

8. (a) In Amazon Web Services ecosystem what are the different type of services available. Give example of each type of services.
 (b) What is Cloud Federation? What are the benefits of it?
 (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 and why?
 (ii). What kind of instances should be suitable for this shopping Website particularly for India and why?

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

9. (a) On which factors does cost of AMI depend generally? Name additional factors other than general factors.
 (b) What is the usefulness of AJAX API?
 (c) Critically comment: Authentication is supported by Google AppEngine.
 (d) Consider the problem scenario:
 ABC corp has their DB application using MySQL. They are planning to port it to cloud. What kind of DB services they should choose and why?

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

**CLOUD COMPUTING
(CSEN 5243)**

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 architectural standards is working with cloud computing industry?
 (a) Service-oriented architecture (b) Standardized Web services.
 (c) Web-application frameworks (d) RDF.
- (ii) Which of these techniques is vital for creating cloud-computing environments?
 (a) Virtualization (b) Personalization
 (c) Localization (d) all of these.
- (iii) How many types of dimensions exists in Cloud Cube Model?
 (a) 3 (b) 2 (c) 4 (d) 5.
- (iv) Which deployment model of cloud computing should be used for a single organization and its authorized users?
 (a) Community Cloud (b) Hybrid Cloud
 (c) Public Cloud (d) Private Cloud.
- (v) The componentized nature of SaaS solutions enables many solutions to support a feature called
 (a) workspace (b) workloads
 (c) mashups (d) composition.
- (vi) Which service model of cloud computing provides the servers, storage devices and networks for a subscriber?
 (a) Infrastructure as a Service (b) Platform as a Service
 (c) Software as a Service (d) Identity as a Service.

- (vii) Who should have the primary responsibility of managing the database for a SaaS-based cloud computing environment like Salesforce.com?
 (a) Service Subscriber (b) Service Provider
 (c) both of them (d) neither of them.
- (viii) Point out the correct combination of cloud service provider and its cloud-based solution.
 (a) Intuit and QuickBooks Online (b) Google and AWS
 (c) Microsoft and GWT (d) IBM and Azure.
- (ix) Which of the following is commonly used to describe the service interface, how to bind information, and the nature of the component's service or endpoint ?
 (a) XML (b) SCDL (c) WSDL (d) HTML.
- (x) Geographic distribution of data across a cloud provider's network is perceived as a major problem for many enterprises because it
 (a) adds to latency
 (b) makes data recovery harder
 (c) complicates regulatory compliances
 (d) heightens security concerns.

Group - B

2. (a) What do you mean by on premise cloud deployment? Give one example scenario where it is suitable.
 (b) State some disadvantages of cloud computing.
 (c) Critically comment: Virtualization is necessary in cloud.
 (d) What are the different deployment models in cloud? Give useful example of each type.

$$(2 + 1) + 2 + 3 + 4 = 12$$

3. (a) What are the responsibilities carried out by different actors in NIST Reference Model?
 (b) Critically comment on the following:
 (i) Services are loosely coupled.
 (ii) Private cloud is more vulnerable than public cloud.
 (c) What are the difference between emulation and virtualization?

$$5 + (2 + 2) + 3 = 12$$

Group - C

4. (a) What is hypervisor? Define aspects of execution environment virtualization. What do scalability and elasticity mean in IaaS?
 (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 different aspects you have judged to arrive at this decision?

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

5. (a) Explain, in brief, the concepts of IaaS, PaaS, and SaaS. Use suitable example(s) and/or appropriate schematic diagram(s) that you feel will help establish your understanding.
 (b) Smart Stock Enterprises, a start-up organization specializing in software services for stock-trading, has decided to engage On Cloud Nine, one reputed cloud-based services provider, as a vendor for managing its entire computing environment. With the help of one single schematic diagram, depict how the responsibility of managing the various layers of the different parts of this computing environment is expected to get distributed between Smart Stock Enterprises and On Cloud Nine.

$$9 + 3 = 12$$

Group - D

6. (a) What is the significance of cloud-based storage? Explain in brief.
 (b) Mention the main advantages and disadvantages of the two types of storage devices – Block and File – being used as cloud-based storage.
 (c) Through a tabular chart, compare / contrast the two types of cloud-based storage – Unmanaged and Managed – with respect to their key characteristics and typical usage in cloud computing.

$$4 + 4 + 4 = 12$$