

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 service provider provides the least amount of built-in security?
(a) SaaS (b) PaaS (c) IaaS (d) all of the mentioned.
- (ii) What does "cloud" in cloud computing typically stand for?
(a) Wireless network (b) Hard disk drives
(c) Solid state drives (d) Internet.
- (iii) Which category of cloud computing model does AWS fall under?
(a) Infrastructure as a Service (b) Platform as a Service
(c) Software as a Service (d) Compliance as a Service.
- (iv) Which one of these is not a cloud computing pricing model?
(a) Free trial (b) Pay per use
(c) Subscription (d) Perpetual.
- (v) Which one of the following is not really an advantage of cloud computing?
(a) Worry-free about running out of storage
(b) Handling diverse network types
(c) Ubiquitous access to computing set-up
(d) Paying only for what you use.
- (vi) Which one of the following is an essential concept with respect to cloud computing?
(a) Reliability (b) Availability
(c) Referential Integrity (d) Abstraction.
- (vii) SaaS supports which of the following?
(a) Single tenancy (b) Multi- instance
(c) Multi-tenancy (d) all of these.

- (viii) Which of the following allows you to create instances of the MySQL database to support your Web sites?
(a) Amazon SQS (b) Amazon RDS
(c) Amazon EC2 (d) Amazon S3.
- (ix) Which of the following model allows vendor to provide security as part of the service level agreement?
(a) IaaS (b) CaaS (c) SaaS (d) IaaS.
- (x) A _____ cloud requires virtualized storage to support the staging and storage of data.
(a) storage (b) compute (c) hybrid (d) community .

Group – B

2. (a) State three important unique characteristics of cloud. Why are they important?
(b) Describe the dimensions in Cloud CUBE model.
(c) Is there any connection between cluster and cloud? Are they same? If not, what are the differences?
(d) Critically Comment: "Public cloud is highly secure."
(1 + 3) + 3 + 3 + 2 = 12
- 3.(a) What is virtualization? Depict, using a classification chart, the taxonomy of various virtualization techniques.
(b) Compare the two types of virtualization for execution environments – process-level and system-level – with respect to technique and virtualization model.
(c) Explain through suitable schematic diagram(s) the following: (i) type-I (or native) hypervisor, and (ii) type-II (or hosted) hypervisor.
4 + 4 + 4 = 12

Group – C

4. (a) What is Infrastructure-as-a-Service (IaaS) and what are the main characteristics of an IaaS solution?
(b) Explain some typical situations where: (i) IaaS makes sense, and (ii) where IaaS may not be suitable.
(c) What advantages does Platform-as-a-Service (PaaS) provide? Explain in brief with one example.
Use suitable example(s) and/or appropriate schematic diagram(s) that you feel will help establish your understanding.
4 + 4 + 4 = 12
5. Consider the problem scenario:
A healthcare solution provider wants to have cloud set up for offered services. The set of services offered for different roles are given as :
Doctors: appointment, patient's information view, prescription generation, test report view,
Secretaries: symptom collection, information update, booking appointment, prescription view, payment receive

Administration: success report generation, doctor information search, Secretary information search.

What are the relevant set(s) of SLA parameter(s) for each of these services.

Justify your answer.

Critically Comment:

I. SOAP is better than REST.

II. Vendor lock-in frees service offerings.

Give a complete example of SaaS offering. What are the different service components offered by that SaaS solution?

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

Group - D

6. (a) How is encryption used in cloud for protection? Is it preventing data loss?
(b) Explain security boundaries with suitable diagram. What is the role of cloud broker in access management? What is OAuth? How does it works?
(c) What is privacy?

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

7. (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.
(d) Use suitable example(s) and/or appropriate schematic diagram(s) that you feel will help establish your understanding.

$$2 + 6 + 4 = 12$$

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) 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?

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

9. (a) What is Google's GWT? Explain, in brief, its core components, using a schematic architecture diagram.
(b) What is Google API? Describe, in brief, its API's for Calendar, Checkout, and Maps.
(c) What is Azure SQL? Describe, in brief, its role in Database as a Service.

$$4 + 5 + 3 = 12$$

$$4 + 5 + 3 = 12$$