

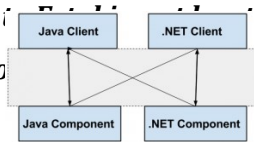
**Time Allotted : 3 hrs**

**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 **one** from each group.*

*Candidates are required to answer in their own words as far as possible.*



**Group – A**

**(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
  - (i) Which one of these is not a cloud computing pricing model?  
(a) Free trial      (b) Pay per use      (c) Subscription      (d) Perpetual.
  - (ii) Which one of these cloud-based solutions is not considered to be a PaaS offering?  
(a) Force.com                                      (b) Amazon EC2  
(c) Microsoft Azure Services                      (d) all of these.
  - (iii) Geographic distribution of data across a cloud provider's network is perceived as a major problem for many enterprises because it:  
(a) complicates regulatory compliances  
(b) adds to latency  
(c) heightens security concerns  
(d) makes data recovery harder.
  - (iv) 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.
  - (v) Virtual Machine Ware (VMware) is an example of  
(a) Infrastructure service                              (b) Platform service  
(c) Software service                                      (d) none of these.
  - (vi) Problem of missing libraries in the host operating system can be resolved by  
(a) System level virtualization                      (b) Process level virtualization  
(c) OS virtualization                                      (d) Machine level virtualization.

- (vii) Azure Storage plays the same role in Azure that \_\_\_\_ plays in Amazon Web Services.  
(a) RDS                      (b) EC2                      (c) S3                      (d) MapReduce
- (viii) Point out the wrong statement:  
I) SOA provides the standards that transport the messages and makes the infrastructure to support it possible.  
II) SOA provides access to reusable Web services over an SMTP network.  
(a) I                      (b) II                      (c) both                      (d) none.
- (ix) Which of the following is used as middleware layer in the following figure:  
  
(a) RDF                      (b) ESB                      (c) UDDI                      (d) Registry.
- (x) An application that needed \_\_\_\_ storage alone might not benefit from a cloud deployment at all.  
(a) onsite                      (b) time sharing                      (c) offline                      (d) virtual

**Group – B**

2. (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**
3. (a) What are the different actors in NIST reference model? What are the responsibilities carried out by them? How do they communicate?  
(b) Critically comment on the following:  
I. Services are loosely coupled.  
II. Security is not an essential cloud characteristic for community deployment.  
**(2+ 4 + 2) + (2 + 2) = 12**

**Group – C**

4. (a) What is hypervisor? Define aspects of execution environment virtualization. What do availability and reliability mean in IaaS?  
(b) What are the differences between emulation and virtualization?  
(c) Critically comment: Type-I virtualization is better than Type-II.  
**(2+ 4 + 2) + 2 + 2 = 12**

5. (a) What advantages does Platform-as-a-Service (PaaS) provide? Explain in brief with one example.
- (b) What is Infrastructure-as-a-Service (IaaS) and what are the main characteristics of an IaaS solution?
- (c) Explain some typical situations where: (i) IaaS makes sense, and (ii) where IaaS may not be suitable.
- Use suitable example(s) and/or appropriate schematic diagram(s) that you feel will help establish your understanding.

**4 + 4 + 4 = 12**

**Group - D**

6. (a) What is Elastic IP? Why is it useful?
- (b) On which factors does cost of AMI generally depend? Name additional factors other than general factors.
- (c) Consider the scenario:  
Linda is a good Photographer. She captures shots and often tries to give special effects on pictures using her own set-up with an AWS account. She plans to distribute her collection of beautiful images to the world.  
What services should she select and why?
- (d) Critically comment:  
SimpleDB is the best choice for high volume transaction systems.

**(1 + 1) + (2 + 2) + 4+2= 12**

- 7.(a) Explain, in brief, why cloud-based storage can be perceived either as an IaaS model or as SaaS model.
- (b) Explain, with a tabular chart, how the security responsibilities are divided between the customer and the vendor for the four different deployment models of cloud.
- (c) Explain, with a tabular chart, how the cloud management responsibilities are divided between the service provider and the service subscriber for the three different service models of cloud.

**2 + 6 + 4 = 12**

**Group - E**

8. (a) Critically comment: Infrastructure security management of Hybrid model and Public model imposes responsibilities on customer only.
- (b) What are the mechanisms for protecting data in cloud? How is tenancy affecting the data security?
- (c) Critically comment: OpenID tells how authentication process will work.
- (d) What is CHAP?

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

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

**3+ 4 + 5 = 12**