

(2 ½ Hours)

[Total Marks: 75]

- N.B.
- 1) All questions are compulsory.
  - 2) Figures to the right indicate marks.
  - 3) Illustrations, in-depth answers and diagrams will be appreciated.
  - 4) Mixing of sub-questions is not allowed.

**Q.1 Attempt All**

(10M)

- (a) Select the correct alternative from the options given:
- (i) Cloud Computing is a paradigm of \_\_\_\_\_ to provide the customers on-demand, utility-based computing service.
- |                           |                             |
|---------------------------|-----------------------------|
| (a) Distributed computing | (b) Undistributed Computing |
| (c) Centralized Computing | (d) Central Computing       |
- (ii) \_\_\_\_\_ serves as a PaaS vendor within Google App Engine system.
- |            |               |
|------------|---------------|
| (a) Amazon | (b) Microsoft |
| (c) Hadoop | (d) Google    |
- (iii) Which one of these is not a cloud computing pricing model?
- |                  |                 |
|------------------|-----------------|
| (a) Free         | (b) Pay Per Use |
| (c) Subscription | (d) Ladder      |
- (iv) Hypervisor runs at the top of hardware.
- |                         |               |
|-------------------------|---------------|
| <del>(a) Type - I</del> | (b) Type - II |
| (c) Type - III          | (d) Type - IV |
- (v) Creating more logical IT resources, within one physical system is called \_\_\_\_\_.
- |                               |                      |
|-------------------------------|----------------------|
| (a) Load balancing            | (b) Hypervisor       |
| <del>(c) Virtualization</del> | (d) Operating System |
- (vi) What is most commonly used for managing the resources for every virtual system?
- |                              |                |
|------------------------------|----------------|
| <del>(a) Load balancer</del> | (b) Hypervisor |
| (c) Router                   | (d) Cloud      |
- (vii) In virtualization where an array of servers that are managed by a virtual storage system is \_\_\_\_\_.
- |                                |                                       |
|--------------------------------|---------------------------------------|
| (a) Application Virtualization | (b) Desktop Virtualization            |
| (c) Network Virtualization     | <del>(d) Storage Virtualization</del> |

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- (viii) Which open stack's component is called as a swift?  
(a) Image Service (b) Dashboard  
~~(c) Object Storage~~ (d) Identity
- (ix) Which component serves as a dashboard for users to manage OpenStack compute, storage and networking services?  
(a) Designate ~~(b) Horizon~~  
(c) Glance (d) Searchlight
- (x) Which OpenStack component provides identity services?  
(a) Trove (b) Dragon flow  
(c) Ceilometer ~~(d) Keystone~~

(b) Fill in the blanks by selecting from the pool of options: (5M)  
{Network, Abstraction, Stack, Heat, Client, Communication, Cloud Provider, Storage, Glance}

- (i) \_\_\_\_\_ is the core orchestration component with OpenStack
- (ii) \_\_\_\_\_ is an essential concept related to Cloud.
- (iii) \_\_\_\_\_ is not a cloud stakeholder.
- (iv) \_\_\_\_\_ virtualization has the ability to run multiple virtual networks with each has a separate control and data plan.
- (v) \_\_\_\_\_ component provides image services for creating VMs in Open Stack.

Q. 2 Attempt the following (Any THREE) (15M)

- (a) Explain cloud computing reference model with a neat diagram.  
(b) How is Grid Computing different from Cloud Computing? Elaborate.  
(c) What is utility oriented computing? Explain.  
(d) Explain the cloud deployment models, in detail.  
(e) Briefly explain the Client/Server architectural style.  
(f) List and explain the models for message-based communication.

Q. 3 Attempt the following (Any THREE) (15M)

- (a) Explain Storage, Network and Desktop virtualization techniques.  
(b) What is a hypervisor? Explain the different types of hypervisors with a neat diagram  
(c) Explain the pros and cons of virtualization.

- (d) Compare Full and para virtualization.
- (e) Define virtualization and describe its benefits.
- (f) List and define the security rings of virtualization.

**Q. 4 Attempt the following (Any THREE) (15)**

- (a) Explain the architecture of Nova.
- (b) Explain the types of storage provided by OpenStack.
- (c) Explain Orchestration Service in OpenStack
- (d) Explain Open Stack Operation in detail.
- (e) What is Devstack? Write the steps to install Devstack.
- (f) Explain Tenant Model Operation in Open Stack

**Q. 5 Attempt the following (Any FIVE) (15)**

- (a) List the types of Cloud. Write about anyone.
- (b) What is Desktop Virtualization, write in brief?
- (c) Write three differences between Cloud Computing and Virtualization.
- (d) What is oVirt?
- (e) Write any three advantages of Distributed System.
- (f) Write a short note on QoS.
- (g) What is Open Stack?
- (h) What is AWS?

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