

**Gramin (Arts, Comm. & Sci.) Mahavidyalaya, Vasantnagar**  
 Kotgyal, Tq. Mukhed Dist. Nanded  
**Department of Computer Science**  
**Certificate Course in Cloud Computing**  
 (2020 – 2021)  
**Admission List**

Sr. No.	Name of the Student	Class	Signature
1	Pandilwad Uddhav Yadav	B. Sc. S. Y.	<i>Uddhav</i>
2	Pachkawade Poonam Santosh	B. Sc. S. Y.	<i>Poonam</i>
3	Ranbhidkar Pralekha Prabhakar	B. Sc. S. Y.	<i>Pralekha</i>
4	Mujawar Azar Bahodddin	B. Sc. S. Y.	<i>Azar</i>
5	Chavan Neha Vyankatrao	B. Sc. S. Y.	<i>Neha</i>
6	Jagave Pooja Maroti	B. Sc. S. Y.	<i>Pooja</i>
7	Kendra Dhiraj Tulshiram	B. Sc. S. Y.	<i>Kendra</i>
8	Pawar Ambadas Shivaji	B. Sc. S. Y.	<i>Pawar</i>
9	Tompe Aarti Prakashrao	B. Sc. S. Y.	<i>Tompe</i>
10	Kachave Neeta Chandrakant	B. Sc. T. Y.	<i>Kachave</i>
11	Narangale Virandra Rajendra	B. Sc. T. Y.	<i>Narangale</i>
12	Kunthewad Anita Rajesh	B. Sc. T. Y.	<i>Kunthewad</i>
13	Shaikh Sana Jakir	B. Sc. T. Y.	<i>Shaikh</i>
14	Panchal Prashant Vishnukant	B. Sc. T. Y.	<i>Prashant</i>
15	Mujawar Juber Atik	B. Sc. T. Y.	<i>Juber</i>
16	Phulwarkar Jayram Ishwar	B. Sc. T. Y.	<i>Jayram</i>
17	Jadhav Prajakta Ashok	B. Sc. T. Y.	<i>Prajakta</i>
18	Chauhan Kalika Kailassingh	B. Sc. T. Y.	<i>Kalika</i>
19	Shinde Khushal Govindrao	B. Sc. T. Y.	<i>Khushal</i>
20	Jadhav Sagar Govind	B. Sc. T. Y.	<i>Sagar</i>

*Hecid*

*[Signature]*  
 Principal  
 Gramin Arts, Comm. & Science  
 Mahavidyalaya, Vasantnagar (Majiyal)  
 Tq. Mukhed Dist. Nanded (MS)

**Gramin (Arts, Comm. & Sci.) Mahavidyalaya, Vasantnagar**

Kotgyal, Tq. Mukhed, Dist. Nanded

Department of Computer Science

**Certificate Course in Introduction to Cloud computing**

---

**Course Objective:**

Aimed at Up-skilling of undergraduate students those are keen to undergo a significant change in their career path. This course is also be offered to engineering students who want to pursuing his interns, apprentices and industrial training on Cloud Computing.

**Learning Outcome:**

Initially, candidates can work as Virtualization Engineer/Programmer/Cloud and Virtualization Expert whose role would be to identify virtualization requirement and provide virtualized solution in Cloud to clients at service provider end. Later on, they can be Data Centre Architect whose job would be to setup Data Centre that provides various services like IaaS, SaaS and PaaS. This course also helps to prepare for the AWS Certified Cloud Practitioner and AWS Solution Architect exam Overview about virtualization and cloud computing.

**Course Duration:**

30 Periods.

**Eligibility:**

Students undergoing Under graduation programme under any university.

**Prerequisite:**

Basic Knowledge of computer networking

**Hardware requirement**

Laptop or Desktop with internet connectivity.

**Certificate Course**  
**Introduction to Cloud computing**

**COURSE SYLLABUS**

**1. Introduction to Cloud computing**

- Understanding cloud fundamental
- Pre-requisites for Cloud Computing (Networking, Security, Web services, Distributed computing).
- Overview of Cloud & Architecture - Evolution of Cloud, Cloud Characteristics, Types and services, Cloud Architecture with Layers, Service & deployment model.

**2. Virtualization:**

- Introduction & evaluation of Virtualization, Virtualization Approaches, Virtualization Types, Various Virtualization Tools (VT-X, Bare Metal provisioning, Type -I and Type-II hypervisors KVM, Hyper-V, Oracle Virtual Box, VMware Workstation Tools).
- Configuring VMware/ Virtual Box
- Setting Linux Container

**3. Basic Linux Commands**

- Linux File System
- File Handling
- Text Processing with gedit, nano, vim
- Installing Software
- Remote Access

**4. Deployment of Public Cloud on AWS**

**A. Part – 01 (Theory)**

- Amazon EC2
- Amazon Simple Storage Service (S3)
- AWS Command Line Interface (CLI)
- Amazon CloudFront
- AWS Identity and Access Management (IAM)
- Amazon RDS
- AWS Lambda
- Amazon VPC
- Amazon LightSail
- Others

## **B. Part – 02 (Lab)**

- Launch & connect EC2 instance - Window Server/Linux Machine (using PuttY)
- Hosting Static Website over IIS-Window Server & Apache-Linux.
- Lab on creating Virtual Private Network (VPC) with Public & Private Subnets along with VPC peering in same/different region.
- Lab on Setup a NAT Gateway in Public Subnet over VPC with VPC endpoint.
- Lab on creation site to site secures VPN connection other application of VPN.
- Lab on Elastic Load Balancers (ELB) with auto scaling - Application/Network/Classic
- Lab on launch & access MySQL DB from window Server/Linux machine and MySQL multi-AZ.
- Lab on AWS Dynamo DB, Route 53 & AWS Lambda
- Other: lab

## **5. Setting Private Cloud with Open-Source tool Free (OpenStack & its components)**

- Introduction to Private Cloud
- Openstack Component
- Keystone
- Glance
- Nova
- Swift
- Cinder
- Neutron
- Lab - Installation and configuration of Openstack (Controller, Compute & Storage)
- Installation of Openstack and its Component (Keystone, Horizon, Nova, Cinder, Newton and others)
- Lab- Security with Free and open-source tool (installation, configuration and working on application, data, network, Server)

## **6. Laboratory of DevOps over Cloud**

- Introduction to Docker, ansible and Kubernetes
- Installing and configuration of Docker & over AWS
- Installing and configuration of Ansible over AWS

## **7. Cloud Security**

- A. Access Control Types
- B. Cryptography and Algorithm Analysis
- C. Cloud Monitoring & Cloud Standards

## **8. Mini Project Work**

Reference Books & Links :

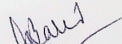
- Cloud Computing: Concepts, Technology & Architecture by Thomas Erl and Ricardo Puttini
- Cloud Computing For Dummies by Judith Hurwitz
- Cloud Computing: From Beginning to End by Mr Ray J Rafaels
- Cloud Computing by Sandeep Bhowmik
- Cloud Computing – An Introduction by Subu Sangameswar
- <https://gacbe.ac.in/pdf/ematerial/18MCA43C-U1.pdf>
- <https://mu.ac.in/wp-content/uploads/2021/01/Cloud-Computing.pdf>
- [https://www.researchgate.net/publication/260038060\\_Cloud\\_Computing\\_A\\_Comprehensive\\_Introduction](https://www.researchgate.net/publication/260038060_Cloud_Computing_A_Comprehensive_Introduction)
- <https://www.kth.se/social/files/554fa451f276544829be2e5e/9-cloud-computing.pdf>
- <https://studytm.files.wordpress.com/2014/03/hand-book-of-cloud-computing.pdf>
- <https://www.dialogic.com/~media/products/docs/whitepapers/12023-cloud-computing-wp.pdf>

  
Head

  
**ICT COMPUTERS**

Barhali Naka, Narsi Road  
Mukhed. .

02461-222888 9767549555

  
Principal  
Grama Arts Centre & Science  
Mahavidyalaya, Vasantnagar (Koppal)  
Tq. Mukhed Dist. Nanded (M.S.)



**Certificate Course in Introduction to Cloud computing**

**FINAL EXAMINATION (MCQ)**

Time : 1 Hrs

Marks : 40

1. What is Cloud Computing?

- a) Cloud Computing means providing services like storage, servers, database, networking, etc
- b) Cloud Computing means storing data in a database
- c) Cloud Computing is a tool used to create an application
- d) None of the mentioned

2. Which of the following is not a type of cloud server?

- a) Public Cloud Servers
- b) Private Cloud Servers
- c) Dedicated Cloud Servers
- d) Merged Cloud Servers

3. Which of the following is a type of cloud computing service?

- a) Service-as-a-Software (SaaS)
- b) Software-and-a-Server (SaaS)
- c) Software-as-a-Service (SaaS)
- d) Software-as-a-Server (SaaS)

4. Which of the following is the application of cloud computing?

- a) Adobe
- b) Paypal
- c) Google G Suite
- d) All of the above

5. Which of the following is an example of the cloud?

- a) Amazon Web Services (AWS)
- b) Dropbox
- c) Cisco WebEx
- d) All of the above

6. Which of the following model attempts to categorize a cloud network based on four dimensional factors?

- a) Cloud Cube
- b) Cloud Square
- c) Cloud Service
- d) All of the mentioned

7. Which architectural layer is used as a backend in cloud computing?  
a) cloud  
b) soft  
c) client  
d) all of the mentioned
8. All cloud computing applications suffer from the inherent \_\_\_\_\_ that is intrinsic in their WAN connectivity.  
a) noise  
b) propagation  
c) latency  
d) all of the mentioned
9. Which of the following architectural standards is working with cloud computing industry?  
a) Web-application frameworks  
b) Service-oriented architecture  
c) Standardized Web services  
d) All of the mentioned
10. Which of the following is required by Cloud Computing?  
a) That the identity be authenticated  
b) That the authentication be portable  
c) That you establish an identity  
d) All of the mentioned
11. Cloud computing is a concept that involves pooling physical resources and offering them as which sort of resource?  
a) cloud  
b) real  
c) virtual  
d) none of the mentioned
12. Which of the following is the most important area of concern in cloud computing?  
a) Scalability  
b) Storage  
c) Security  
d) All of the mentioned
13. Which of the following is not a property of cloud computing?  
a) virtualization  
b) composability  
c) scalability  
d) all of the mentioned
14. How many phases are there in Cloud Computing Planning?  
a) 1  
b) 5  
c) 3  
d) 6
15. Which is the most essential concept related to Cloud computing?  
a) Abstraction  
b) Reliability  
c) Productivity  
d) All of the mentioned

16. An application that provides for transaction overflow in a reservation system is an example of \_\_\_\_\_

- a) cloud bursting
- b) cloud provisioning
- c) cloud servicing
- d) all of the mentioned

17. Which of the following is the deployment model?

- a) public
- b) private
- c) hybrid
- d) all of the mentioned

18. Which of the following dimension is related to organization's boundaries?

- a) Physical location of data
- b) Ownership
- c) Security boundary
- d) All of the mentioned

19. Which of the following is provided by ownership dimension of Cloud Cube Model?

- a) Proprietary
- b) Owner
- c) P
- d) All of the mentioned

20. Which of the following is related to the service provided by Cloud?

- a) Sourcing
- b) Ownership
- c) Reliability
- d) AaaS

*Handwritten:*  
S.P.S.  
Head.

*Handwritten signature:*  
**JET COMPUTERS**

Barhail Naka, Narsi Road  
Mukhed.

02461-222888 9767549555

*Handwritten signature:*  
Principal  
Gramin Arts, Comm. & Science  
Mahavidyalaya, Vasantnagar (Kotiyal)  
Tq. Mukhed Dist. Nanded (M.S.)