COLLEGE OF ENGINEERING PUNE
(An Autonomous Institute of Government of Maharashtra.)

END Semester Examination

Programme: B.Tech | **Semester: VII**

Course Code: CT(DE)-22002 | **Course Name: Cloud and Big Data**

Branch: Computer Science and Engineering | **Academic Year: 2024-25**

Duration: 3 hrs | **Max Marks: 60**

Student PRN No.

Instructions:

1. Figures to the right indicate the full marks.
2. Mobile phones and programmable calculators are strictly prohibited.
3. Writing anything on question paper is not allowed.
4. Exchange/Sharing of stationery, calculator etc. not allowed.
5. Write your PRN Number on Question Paper.
6. Write answers to the questions in the given order only.

			Marks	CO	PO
Q 1	a	What is cloud computing? Explain its characteristics and benefits.	5	1	1,2,3
	b	Explain the following : a)Amazon EC2 b)AWS Region c)Snowball Edge or A company is facing the performance issues with its EC2 instances. Explain with the help of any three parameters how would you identify the root causes and optimize the performance of these instances.	3	2	4,5
	c	ABC company has private servers on its premises and some of its workload gets distributed on the public cloud. What type of cloud model is ABC using? List out the benefits of this cloud model.	2	1	1,2,3
Q 2	a	Define K8's.Explain its role. How Docker and K8 are linked?	5	3	4,5
	b	What is container orchestration?	3	2,3	2,4
	c	Explain the following : a)Minikube b)Kubectl	2	2,3	2,4,5

Q 3	a	What is Virtual Machine Migration? Discuss VM migration techniques with its use-cases.	5	2	8
	b	An application you are managing is experiencing a sudden surge in traffic. How would you auto-scale the resources to handle this increased load efficiently? List out and explain any three methods to address this issue.	3	1,2	7
	c	With VM memory size of 1024 GB and the transmission rate of 16 MB/seconds calculate the total migration time in hours.	2	1,2	7,8
Q4	a	What is Cloud provisioning? Explain its various types by specifying their use cases.	5	1,2	1,2 ,3
	b	Explain resource dynamic reconfiguration with example.	3	1,2	2,3
	c	Write short note on SLA life cycle.	2	1,2	1,2 ,3
Q5	a	What is OpenStack? Explain its architecture.	5	3	4,5
	b	What are different storage types available in OpenStack compute?	3	3	2,4
	c	Orchestration components in OpenStack responsible for :- a. Identity service b. Management of VM images in deployment.	2	3	2,4 ,5
Q6	a	Imagine that you are uploading a file of 640MB into HDFS of Hadoop 2X. The 128MB of data is successfully uploaded into HDFS but another client wants to read the uploaded data while the uploading task is still in progress. Explain this scenario with the help of a suitable diagram using HDFS write pipeline. Is the 128 MB of data that is uploaded displayed to the client?	5	4,5	1,2 ,3
	b	Write short notes on : a. Hive Metastore b. Secondary Namenode in Hadoop c. Pig Execution Modes	3	4,5	1,2 ,3
	c	Differentiate Hive and HBase.	2	4,5	1,2 ,3