


Name: Enrolment No:			
UPES End Semester Examination, December 2024			
Course: Distributed Systems Program: M.Tech. CSE Course Code: CSEG7030		Semester: I Time : 03 hrs. Max. Marks: 100	
Instructions: <ul style="list-style-type: none"> • Attempt all questions. • Mention the question number prominently on your answer sheet and write legibly. • Use of calculator is allowed. 			
SECTION A (5Qx4M=20Marks) Attempt all questions. Each question carries 4 marks.			
S. No.	Question	Marks	CO
Q 1	“A networking technology that moves data processing and storage closer to the devices that create and use the data” – identify the technology and its potential advantages.	4	CO3
Q 2	Establish the importance of replication in the distributed system.	4	CO1
Q 3	Compare distance-vector and link-state routing algorithms in terms of their operation and efficiency.	4	CO2
Q 4	Comment on “on-demand elastic computing” nature of cloud computing model.	4	CO3
Q 5	Explain how Docker can help in achieving cross-platform compatibility.	4	CO5
SECTION B (4Qx10M= 40 Marks) Attempt all questions. Each question carries 10 marks.			
Q 6	Explain the working of HDFS with the help of an architectural diagram.	10	CO4
Q 7	Identify the class, host id and network id of the following IP addresses: i. 192.168.0.2 ii. 222.222.5.3 iii. 45.199.45.8	10	CO2
Q 8	If the data transmitted along with checksum is 10101001 00111001 00011101. But the data received at destination is 00101001 10111001 00011101. Apply Checksum method whether an error can be detected or not. List some disadvantages of the method.	10	CO1

Q 9	Critically review the advantages of Map-Reduce algorithm. Explain each of the steps of the algorithm to count the frequency of different words on the given sample text assuming number of clusters as equal to 3: “There was a fine day. The day was sunny and bright. A fine was paid by Sunny for submitting books late.”	10	CO3
SECTION-C (2Qx20M=40 Marks) Attempt all questions. Each question carries 20 marks.			
Q 10	<p>Explain each of the components of Hadoop. Write the commands for the following:</p> <ul style="list-style-type: none"> • Start Hadoop server • Create a directory in HDFS with name “new user” • Move to this directory. • Make a file on local system “demo.txt” • Transfer the file from local system to HDFS inside “new user” • List the contents of “new user” • Stop Hadoop server 	20	CO4, CO5
Q 11	<p>Critically analyze the advantages that gRPC bring over traditional RPC model. Explain RabbitMQ. Write a code in Python to implement a client-server application using RbbitMQ in Python.</p> <p style="text-align: center;">OR</p> <p>Critically analyze the pros and cons of “serverless computing”. Give one use case where it can be useful. Explain the working of AWS Lambda.</p>	20	CO3, CO5