Nirma University

Institute of Technology

Semester End Examination (IR/RPR), December 2021

B.Tech in Computer Science and Engineering, Semester: VII

2CSDE77: Microservice Architecture and Programming

Roll/ Exam No | Supervisor's initial with date

Time: 2 Hours | Max Marks: 50

Instructions :
1. Attempt all questions.
2. Figures to right indicate full marks.
3. Draw neat sketches wherever necessary.
4. Assume necessary data wherever required.

Q.1	**Answer the following.**		**[16]**
A CO4	Show how Docker Swarm facilitates distributed deployment of the application with the support like orchestration of containers.	(06)	
B CO1	1. How materialized views can be helpful in micro-service based applications?	(03)	
	2. Compare REST API approach with gRPC approach for MSA based application design.	(03)	
C CO1	Compare CRUD operations based data management with event sourcing based data management.	(04)	
Q.2	**Do as directed.**		**[16]**
A CO2	With suitable example explain the concept of Consumer group in Kafka.	(06)	
B CO3	Write pseudo-code for JMS based producer and consumer for Topic based message exchange between the two.	(06)	
	OR		
B CO3	Write gRPC service definition including required message definition for the application which allows client to get the current location of server as well server allows client to get its current location. Here client and server both can be considered application running in mobile devices.	(06)	
C CO2	How Kafka can be used in some medium or large scale applications to address some generic requirements?	(04)	
Q.3	**Answer the following.**		**[18]**
A CO3	With suitable example explain the purpose of circuit breaker in Microservice based application deployment.	(05)	

B CO3	Suggest suitable mechanism for eliminating shared table when the database per service pattern is in place.	(06)
C CO2	Compare ACID and BASE consistency models.	(07)

OR

C CO2	Compare various Read and Write concern levels available in MongoDB for consistency in the deployment with distributed and replicated database.	(07)