MIT ACADEMY OF ENGINEERING

COURSE CODE: CS356T **26 FEBRUARY 2024**

TY BTECH SEMESTER - VI 2019 PATTERN 2023 - 2024 EXAMINATION

DEPARTMENT OF COMPUTER ENGINEERING

MID SEMESTER EXAMINATION

CLOUD NATIVE APPLICATION DEVELOPMENT

TIME : 2 Hrs **MAX MARKS : 50**

TOTAL NO OF QUESTIONS: 05 **TOTAL NO OF PRINTED PAGES: 02**

INSTRUCTIONS TO CANDIDATES:

1. Assume suitable data wherever necessary
2. Non programmable scientific calculators are allowed
3. Black figures to the right indicate full marks

1	**a)**	You want to deploy a web application on AWS. The database required for this application is MySQL. You got the requirement from the client that the database should be highly available. How will you ensure that the database will be highly available?	**[6]**	**CO1**	**L4**
	b)	You have deployed the database using RDS for a certain web application where 90% of the operations are read queries. After deploying the application, it has been found that the read queries are running very slow. Suggest the solution for the above mentioned problem	**[4]**	**CO1**	**L3**
2	**a)**	What is the need for Caching? Explain how ElastiCache helps in caching with suitable diagram	**[6]**	**CO1**	**L3**
	b)	Differentiate between Memcached and Redis	**[4]**	**CO2**	**L2**
3	**a)**	Explain various types of indexes supported by DynamoDB Tables	**[4]**	**CO2**	**L2**

	b)	You want to develop a scoreboard for a mobile gaming application using DynamoDB as a database. Each time you will be reading and writing a database item of size 22 KB. How many RCUs and WCUs will be required for provisioning a table for the various consistency types?	**[6]**	**CO2**	**L4**
4	**a)**	Explain the components supported by CloudFormation Template	**[6]**	**CO3**	**L3**
	b)	Explain any five intrinsic functions supported by CloudFormation	**[6]**	**CO3**	**L3**
5	**a)**	What is the need for a message queue?	**[2]**	**CO3**	**L3**
	b)	Explain the following terminologies with respect to Amazon SQS: 1. Visibility Timeout 2. Dead Letter Queue 3. Extended Client	**[6]**	**CO3**	**L3**

MIT ACADEMY OF ENGINEERING

COURSE CODE: CS356T **22 JUNE 2024**

TY BTECH SEMESTER - VI RE-EXAMINATION BACKLOG 2019 PATTERN
2023 - 2024 EXAMINATION

DEPARTMENT OF COMPUTER ENGINEERING

RE-EXAMINATION

CLOUD NATIVE APPLICATION DEVELOPMENT

TIME : 2 Hours 30 Mins **MAX MARKS :70**

TOTAL NO OF QUESTIONS: 05 **TOTAL NO OF PRINTED PAGES:02**

INSTRUCTIONS TO CANDIDATES:

1. Assume suitable data wherever necessary
2. Non programmable scientific calculators are allowed
3. Black figures to the right indicate full marks

01	**a)**	Compare the use of HTTP APIs and REST APIs in AWS API Gateway. Discuss scenarios where each type would be more appropriate. Explanation of HTTP APIs (4 marks) Explanation of REST APIs (4 marks) Appropriate scenarios for each type (2 marks)	**[10]**	**CO3**	**L2**
01	**b)**	Describe how Cloud Formation works, including the role of templates and stacks. Cloud Formation Working: 05 Marks Role of templates and stacks: 03 Marks	**[08]**	**CO4**	**L1**
02	**a)**	Illustrate with suitable example, the need of message queues in application development.	**[06]**	**CO4**	**L3**

02	**b)**	List and describe three use cases where serverless architecture can significantly improve the performance and scalability of an e-commerce platform. 1. List (2 marks) 2. Three use Cases (6 marks)	**[08]**	**CO5**	**L1**
03	**a)**	You want to develop an application which will process the data to extract the important information from the data. The processing requires 20 minutes. Which of the following AWS feature will be used to deploy the application? 1. Amazon EC2 Instance 2. AWS Lambda function Justify your selection	**[06]**	**CO1**	**L4**
03	**b)**	Analyze the security implications of managing data across S3, S3 Glacier, and EFS and suggest best practices. Security implications (5 marks) Best practices (3 marks)	**[06]**	**CO2**	**L4**
04	**a)**	Elaborate the following terms with respect to Amazon SQS 1. Message visibility timeout 2. Dear letter queue 3. SQS extended client	**[06]**	**CO6**	**L2**
04	**b)**	List and describe the basic IAM components involved in user and access management 1. List (2 marks) 2. IAM components involved (4 marks)	**[06]**	**CO2**	**L1**

05	**a)**	Discuss the key concepts of Code Pipeline and how pipeline execution works in AWS. Key concepts of Code Pipeline (6 marks) How pipeline execution works (4 marks)	**[10]**	**CO6**	**L3**
05	**b)**	Explain various features of AWS Lambda functions. features of AWS Lambda function (4 marks)	**[04]**	**CO5**	**L1**
05	**b)**	**OR** Explain any four components of a Cloud Formation Template	**[04]**	**CO3**	**L1**

MIT ACADEMY OF ENGINEERING

COURSE CODE: CS356T **20 MAY 2022**

TY BTECH SEMESTER - VI 2021 - 2022 EXAMINATION

DEPARTMENT OF COMPUTER ENGINEERING

END SEMESTER EXAMINATION

CLOUD NATIVE APPLICATION DEVELOPMENT

TIME : 2 HOURS **MAX MARKS : 50**

TOTAL NO OF QUESTIONS: 3 **TOTAL NO OF PRINTED PAGES: 2**

INSTRUCTIONS TO CANDIDATES:

1. Assume suitable data wherever necessary
2. Non programmable scientific calculators are allowed
3. Black figures to the right indicate full marks

1	**a)**	Explain with suitable example the features available in DynamoDB for high availability and fault tolerance	**[6]**	**CO3**	**L3**
	b)	An application is reading 22KB data per second in one item with eventual read operations and 14KB data per second in one item with consistent read operations. Also it is going to write 35KB data per item per second. Calculate the number of RCUs and WCUs required to complete the operations.	**[6]**	**CO3**	**L3**
	c)	An application based on retail product sale is facing performance issue while using read queries for a certain DynamoDB table. It is facing the issues while selecting the list of products. Suggest the solution to improve the performance of the application	**[4]**	**C03**	**L4**
2	**a)**	List various components to be used in template in Amazon CloudFormation with suitable example	**[6]**	**CO4**	**L3**
	b)	Explain any three intrinsic functions available in Amazon CloudFormation	**[6]**	**CO4**	**L2**
	c)	Explain with suitable example the need for Dependson attribute in Amazon CloudFormation	**[4]**	**CO4**	**L2**

3	**a)**	Explain the features of Amazon API Gateway. Develop a suitable application using Amazon API Gateway	**[8]**	**CO5**	**L3**
	b)	Consider a web application having web tier, application tier and database tier. The web tier is facing the incoming requests and forwarding these requests to application tier. The application tier is processing those requests and writing the processed data to database tier. The load on application is unpredictable. Also application tier and database tier are slower compared to the amount of requests received per second. Suggest and design the appropriate solution to ensure that the requests are not dropped at any cost and latency is minimum	**[10]**	**CO5**	**L4**

MIT ACADEMY OF ENGINEERING

COURSE CODE: CS356T **21 MAY 2024**

TY BTECH SEMESTER - VI 2019 PATTERN 2023 - 2024

EXAMINATION

DEPARTMENT OF COMPUTER ENGINEERING

END SEMESTER EXAMINATION

CLOUD NATIVE APPLICATION DEVELOPMENT

TIME : 2 Hrs **MAX MARKS : 50**

TOTAL NO OF QUESTIONS:05 TOTAL NO OF PRINTED PAGES: 02

INSTRUCTIONS TO CANDIDATES:

1. Assume suitable data wherever necessary
2. Non programmable scientific calculators are allowed
3. Black figures to the right indicate full marks

01 a)	An organization wants to deploy its web application using function as a code. Which AWS service supports this facility? Explain the features of this service.	**[4]**	**CO6**	**L3**
01 b)	Explain the concept of versions and aliases supported by Lambda functions with the use cases.	**[6]**	**CO6**	**L3**
02 a)	Explain the concept of canary release deployment for deploying an API using Amazon API Gateway.	**[4]**	**CO4**	**L2**
02 b)	Explain the following concepts supported by Amazon API Gateway 1. Caching 2. Usage Plans 3. Request Throttling	**[6]**	**CO4**	**L3**
02 c)	List various methods supported by REST API using suitable example	**[6]**	**CO4**	**L4**

03	Explain various routing strategies supported by Amazon Route 53	**[6]**	**CO6**	**L3**
04 a)	Explain various deployment strategies supported by AWS Code Deploy	**[6]**	**CO6**	**L3**
04 b)	List any six git commands and explain its working with suitable example	**[6]**	**CO6**	**L3**
05	An organization wants to deploy its web application on AWS Platform. Design an architecutre diagram for the application.	**[6]**	**CO5**	**L4**

MIT ACADEMY OF ENGINEERING

COURSE CODE: CS356T **28 February 2023**

TY BTECH SEMESTER - VI 2022 - 2023 EXAMINATION

DEPARTMENT OF COMPUTER ENGINEERING

MID SEMESTER EXAMINATION

CLOUD NATIVE APPLICATION DEVELOPMENT

TIME : 2.00 PM to 4.00 PM **MAX MARKS : 50**

TOTAL NO OF QUESTIONS: 04 **TOTAL NO OF PRINTED PAGES: 02**

INSTRUCTIONS TO CANDIDATES:

1. Assume suitable data wherever necessary
2. Non programmable scientific calculators are allowed
3. Black figures to the right indicate full marks

1	**a)**	List various types of credentials associated with IAM Users with suitable examples	**[4]**	**CO1**	**L1**
	b)	Explain with suitable example, the components of AWS Security Policy	**[6]**	**CO1**	**L3**
	c)	The organization wants to control the access to the resources through the permissions boundaries. Explain with suitable example the functioning of Permissions Boundaries in AWS	**[4]**	**CO1**	**L3**
2	**a)**	List various types of storage classes available in S3 with suitable example	**[6]**	**CO2**	**L2**
	b)	Explain various features provided by Amazon S3	**[4]**	**CO2**	**L3**

3	**a)**	Differentiate between relational and nonrelational databases. List variuos services available in AWS for relational and nonrelational databases.	**[6]**	**CO3 L2**
	b)	Explain various features provided by DynamoDB with suitable example	**[6]**	**CO3 L3**
	c)	The application wants to read the data from DynamoDB table. The size of each item is 14KB. Also the application wants to write the 14KB item to DynamoDB table. Eventual consistency is used for reading the data. How many RCUs and WCUs will be required for this operation?	**[4]**	**CO3 L3**
4	**a)**	Write a program in Python to stop all the running EC2 instances	**[6]**	**CO1 L3**
	b)	Write a program in Python to display the list of Buckets in an AWS Account	**[4]**	**CO2 L3**

MIT ACADEMY OF ENGINEERING

COURSE CODE: CS356T **23 JUNE 2023**

TY BTECH SEMESTER - VI RE-EXAMINATION 2022-2023

EXAMINATION

DEPARTMENT OF COMPUTER ENGINEERING

RE-EXAMINATION

CLOUD NATIVE APPLICATION DEVELOPMENT

TIME : 3 HOURS **MAX MARKS : 100**

TOTAL NO OF QUESTIONS: 10 **TOTAL NO OF PRINTED PAGES: 2**

INSTRUCTIONS TO CANDIDATES:

1. Assume suitable data wherever necessary
2. Non programmable scientific calculators are allowed
3. Black figures to the right indicate full marks

1	**a)**	Write a program in Python to launch an EC2 instance	**[5]**	**CO1**	**L3**
	b)	Write a program in Python to create S3 Bucket	**[5]**	**CO1**	**L3**
2		Explain the following concepts with respect to IAM Service of AWS I. Role II. Permissions Boundary	**[10]**	**CO2**	**L3**
3		Explain various features provided by Amazon S3 for data storage	**[10]**	**CO2**	**L2**
4		Explain various components of Amazon VPC with suitable example	**[10]**	**CO2**	**L3**
5		What is the use of Amazon CloudFormation? Explain various components of a CloudFormation Template	**[10]**	**CO5**	**L3**
6		Explain the working of Amazon API Gateway with suitable example	**[10]**	**CO4**	**L3**

7	Explain any five features provided by Amazon SQS with suitable example	**[10]**	**CO6**	**L3**
8	Write a program in Python using Amazon Lambda funtion to get the object name uploaded in S3 bucket and store its details in DynamoDB table	**[10]**	**CO3**	**L4**
9	Explain any five intrinsic functions supported by Amazon CloudFormation	**[10]**	**CO5**	**L3**
10	Explain the followng concepts in Amazon DynamoDB 1. Partition Key and Sort Key 2. RCU 3. WCU 4. Global Secondary Index 5. Local Secondary Index	**[10]**	**C03**	**L2**

MIT ACADEMY OF ENGINEERING

COURSE CODE: CS356T **22 MAY 2023**

TY BTECH SEMESTER - VI 2022 - 2023 EXAMINATION

DEPARTMENT OF COMPUTER ENGINEERING

END SEMESTER EXAMINATION

CLOUD NATIVE APPLICATION DEVELOPMENT

TIME : 10.00 AM TO 12.00 NOON **MAX MARKS : 50**

TOTAL NO OF QUESTIONS: 05 **TOTAL NO OF PRINTED PAGES: 02**

INSTRUCTIONS TO CANDIDATES:

1. Assume suitable data wherever necessary
2. Non programmable scientific calculators are allowed
3. Black figures to the right indicate full marks

1	**a)**	Explain various features of AWS Lambda functions	**[4] CO2**	**L2**
	b)	You want to develop an application which will process the data to extract the important information from the data. The processing requires 20 minutes. Which of the following AWS feature will be used to deploy the application? 1. Amazon EC2 Instance 2. AWS Lambda function Justify your selection	**[2] CO2**	**L4**
	c)	You have configured an event notification to S3 Bucket with AWS Lambda function as a target. Write a python code for Lambda function to insert the bucket and object name received in event object of lambda function into DynamoDB table.	**[4] CO2**	**L3**
2	**a)**	Explain with suitable example, the need of message queues in application development.	**[4] CO6**	**L3**

	b)	Explain the following terms with respect to Amazon SQS 1. Message visibility timeout 2. Dear letter queue 3. SQS extended client	**[6]**	**CO6 L3**
3	**a)**	Explain any four components of a CloudFormation Template	**[4]**	**CO5 L3**
	b)	Explain any three intrinsic functions supported by CloudFormation Template	**[6]**	**CO5 L3**
4	**a)**	List the various types of APIs supported by Amazon API Gateway	**[3]**	**CO4 L2**
	b)	Explain the need for deployment stages in Amazon API Gateway	**[3]**	**CO4 L3**
	c)	Explain the caching features provided by Amazon API Gateway	**[4]**	**CO4 L3**
5	**a)**	You have developed a web application and deployed it using AWS infrastructure. In order to access the application you have purchased a domain with the name www.myinstaapp.com. The users from all over the world are accessing your application. Which routing policy/policies will you use to resolve the domain name into the ip address of the server on which the application is running?	**[4]**	**CO6 L4**
	b)	Explain how the domain name is resolved into IP address.	**[6]**	**CO6 L3**

MIT ACADEMY OF ENGINEERING

COURSE CODE: CS463T **23 SEPTEMBER 2022**

TY BTECH SEMESTER - VII EXAMINATION 2022 - 2023

DEPARTMENT OF COMPUTER ENGINEERING

CLOUD NATIVE APPLICATION DEVELOPMENT

TIME : 2 HOURS **MAX MARKS : 50**

TOTAL NO OF QUESTIONS: 3 **TOTAL NO OF PRINTED PAGES: 1**

INSTRUCTIONS TO CANDIDATES:

1. Assume suitable data wherever necessary
2. Non programmable scientific calculators are allowed
3. Black figures to the right indicate full marks

1	**a)**	Illustrate any five git commands to to pull and push the data from AWS CodeCommit Repository	**[10]**	**CO1**	**L3**
	b)	Explain the components of Buildspec.yml file and its use	**[8]**	**CO1**	**L3**
	c)	Explain the working of CodeDeploy with the appspec.yml file	**[10]**	**CO1**	**L3**
2	**a)**	What is the use of environment varibles in AWS Lambda function? Explain with suitable example	**[6]**	**CO2**	**L2**
	b)	What is the need to create versions and aliases in Lambda functions?	**[6]**	**CO2**	**L3**
3	**a)**	Write the steps to create the docker container from docker file?	**[5]**	**CO3**	**L3**
	b)	Explain the architecture of Kubernetes	**[5]**	**CO3**	**L3**