

(2½ Hours)

[Total Marks: 75]

N. B.: (1) **All** questions are **compulsory**.

(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.

(3) Answers to the **same question** must be **written together**.

(4) Numbers to the **right** indicate **marks**.

(5) Draw **neat labeled diagrams** wherever **necessary**.

(6) Use of **Non-programmable** calculators is **allowed**.

Q1. Attempt three of the following.

15 Marks

- a. How do gateway offloading and gateway routing contribute to the efficiency and security of microservices architectures?
- b. What are microservices, and what are the key advantages of using this architectural style?
- c. Why are Containers used in Microservices?
- d. What are the key features and benefits of Azure Service Fabric in managing microservices and container-based applications?
- e. How do monitoring tools in Azure Service Fabric, including infrastructure and application monitoring, assist in managing and troubleshooting the system?

Q2. Attempt three of the following.

15 Marks

- a. What are the key features of Azure Kubernetes Service (AKS), and how do they enhance the management of containerized applications?
- b. What are the key components of Kubernetes?
- c. Explain Monolithic Application Authentication and Authorization Process.
- d. What is Microservices Architecture, and what are benefits, and drawbacks of using this architectural style?
- e. What are the different Types of Databases on Azure?

Q3. Attempt three of the following.

15 Marks

- a. What are the different components of DevOps. Explain each in brief.
- b. What is Azure DevOps Repository, and what are its key features and benefits for version control and collaboration?
- c. Which points must be considered while customizing process and publish on Azure?
- d. What is DevOps, and what are the common challenges and problems associated with implementing DevOps practices?
- e. Explain Software Development Lifecycle in Microsoft Azure platform development.

Q4. Attempt three of the following.

15 Marks

- a. What is the flow of a build on a Master branch, and how does it integrate with the overall development and deployment process?
- b. What are the key steps involved in the process of continuous delivery?
- c. Explain the types of activities that are common in both private and CI build.
- d. Explain the rules of thumb for release candidate packages.
- e. What are the different types of environments typically found in a DevOps pipeline, and what roles do they play?

Q5. Attempt three of the following.

15 Marks

- a. Explain the strategic business aspects of an API implementation?
- b. State and explain the attributes of API architecture?
- c. Write a short note on API standards?
- d. What is the purpose of an API key in the context of API security and usage?
- e. What is Request-based security in AWS API Gateway and what are the various ways it can be implemented?
