This question paper contains **3** printed pages]

Roll No. ⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜

S. No. of Question Paper : **8077**

Unique Paper Code : **2343010019**

Name of the Paper : **Cloud Computing**

Name of the Course : **B.Sc. (H) Computer Science-DSE**

Semester : **VI**

Duration : **3 Hours**   Maximum Marks : **90**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Section A is compulsory.

Attempt any *four* questions from Section B.

Parts of a question should be attempted together.

Section-A

1. (*a*) Describe the role of virtualization in cloud computing. Mention *two* advantages and *two* disadvantages of using virtualization.   6

    (*b*) Give any *three* characteristics of cluster computing. How did cluster computing facilitate the evolution of cloud computing ?   6

    (*c*) Explain MapReduce programming model. List any *two* examples/ operations that use MapReduce.   6

P.T.O.

(d) Discuss the various obstacles and challenges faced in the following areas with respect to deployment of cloud computing model :   6

(i) Storage

(ii) SLA

(iii) Security.

(e) How can cloud computing costs be measured and managed effectively ? Explain the key factors that influence the cloud pricing.   6

Section–B

2. (a) Graphically represent the classification taxonomy of virtualization. Describe the key benefits of using containers in a virtualized environment.   8

(b) Define the role of hypervisors in virtualization ? Explain the types of hypervisors with the help of suitable examples.   7

3. (a) What are the parallel and sequential methods of computing ? Describe the layered architecture of distributed systems highlighting the role of each layer.   8

(b) What are the different architectural styles used in distributed computing ? Discuss any *two* system architecture styles in detail.   7

4. (a) List any *four* features of Cloud Computing. Compare and contrast Cloud Computing with both Grid Computing and Mainframe systems.   8

(b) Define cloud security. State the role of the following with respect to cloud security : 7

(i) Service boundary of different service models

(ii) Storage location and tenancy

(iii) Cloud storage access.

5. (a) List any *two* storage technologies that support data-intensive computing. Describe the Google File System (GFS), highlighting its architecture and advantages for handling large scale data. 8

(b) What is Cloud Security Alliance (CSA) cloud reference model ? Explain Identity and Access Management with its importance. 7

6. (a) What are the essential characteristics that define a Platform-as-a-Service (PaaS) solution in cloud computing ? How does PaaS differ from Infrastructure-as-a-Service (IaaS) ? Explain with suitable examples. 8

(b) List different types of cloud deployment models in cloud computing ? Differentiate between them based on ownership, accessibility, and use cases. 7