

Cloud Computing for Data Science (315327)

MSBTE Diploma · K-Scheme · Model Question Paper — Set B

Time: 3 Hours**Max. Marks: 70****Instructions:**

1. All questions are compulsory.
2. Answer each next main question on a new page.
3. Illustrate your answers with neat sketches wherever necessary.
4. Figures to the right indicate full marks.
5. Assume suitable data, if necessary.
6. Mobile phone, pager and any other electronic communication devices are not permissible in the examination hall.

Q.1 Attempt any FIVE of the following:**10**

- a) Define grid computing. Give one example.
- b) State the meaning of 'on-demand self-service' and 'rapid elasticity' in cloud computing.
- c) Define virtualization. State any two needs of virtualization.
- d) Enlist the four types of cloud storage.
- e) State any four limitations of key-value databases.
- f) Define cloud machine learning. Name any two cloud ML platforms.
- g) List any four GPU as a Service (GPUaaS) providers.

Q.2 Attempt any THREE of the following:**12**

- a) Explain Infrastructure as a Service (IaaS) with a neat diagram.
- b) Explain community cloud with its advantages and disadvantages.
- c) Explain batch and streaming data processing in machine learning with a neat diagram.
- d) Explain any four factors for selection of a cloud machine learning platform.

Q.3 Attempt any THREE of the following:**12**

- a) Describe the components of cloud computing architecture: front end, back end, network and cloud-based delivery.
- b) Describe the architecture of network virtualization with a neat diagram.
- c) Differentiate between block-based, file-based and object-based storage. (Any four points)
- d) Explain the functionality of Azure Machine Learning Studio.

Q.4 Attempt any THREE of the following:**12**

- a) Explain the evolution of computing from mainframes to cloud. State the meaning of utility computing.
- b) Explain the role of cloud computing in data science.
- c) Explain Google BigQuery as a cloud data science tool for machine learning.
- d) Explain the services provided by Artificial Intelligence as a Service (AIaaS).
- e) Differentiate between ETL and ELT pipelines. (Any four points)

Q.5 Attempt any TWO of the following:

12

- a) Explain data virtualization with a neat diagram. State its benefits and explain one real-world application.
- b) Explain the architecture of Amazon Redshift (leader node, compute nodes, node slices). Write the steps to launch a Redshift cluster and load data from Amazon S3.
- c) Explain Google Cloud AutoML. Describe the workflow to build a custom image classification model using AutoML.

Q.6 Attempt any TWO of the following:

12

- a) Explain the key features of Amazon SageMaker with a neat diagram of its ML workflow.
- b) A college project team wants to train a CNN to classify plant-leaf diseases using a cloud GPU instance. Explain the steps they should follow from uploading data to deployment.
- c) Explain the key features of pre-tuned AI services. Explain how the prediction performance of a deployed model is monitored.

Note: This is a **model question paper prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — anandatechnologies.in