

BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT

BIG DATA MANAGEMENT

Monday 17th April 2023 - Afternoon

Answer any FOUR questions out of SIX. All questions carry equal marks.

Time: TWO hours

Answer any Section A questions you attempt in Answer Book A
Answer any Section B questions you attempt in Answer Book B

The marks given in brackets are indicative of the weight given to each part of the question.

Calculators are **NOT** allowed in this examination.

Section A
Answer Section A questions in Answer Book A

A1.

- a) What are the components of Laney's V?
(4 marks)
- b) Explain and describe **FOUR** of the main components of Laney's V.
(8 marks)
- c) Briefly describe the key elements of big data.
(4 marks)
- d) Describe **FIVE** real-world examples of any of the elements of big data mentioned in part c).
(5 marks)
- e) Describe **FOUR** real-world challenges of big data.
(4 marks)

A2.

- a) What are the main challenges for a company when managing big data?
(5 marks)
- b) Explain and describe the key components of service provision of big data.
(7 marks)
- c) Describe **THREE** of the key regulations applicable to data protection and governance of big data throughout the world.
(5 marks)
- d) Provide a definition of personal data.
(3 marks)
- e) What are the challenges of managing personal data?
(5 marks)

A3.

- a) Explain 'Privacy by Design' and why it is important.
(7 marks)
- b) Give **FIVE** examples of personal data.
(5 marks)
- c) Under what circumstances is personal data not covered by GDPR?
(5 marks)
- d) What criteria should be considered when formulating strategies for big data?
(8 marks)

Section B
Answer Section B questions in Answer Book B

B4.

- a)
 - i) Describe **TWO** human-generated big data sources.
 - ii) Describe **TWO** machine-generated big data sources.
(10 marks)
- b)
 - i) Give **TWO** examples of unstructured big data and state how this data can be stored.
 - ii) Give **TWO** examples of semi structured big data and state how this data can be stored.
(10 marks)
- c) Explain why metadata is important in the processing of big data. (5 marks)

B5.

- a)
 - i) Describe the architecture of the Hadoop Distributed File System (HDFS).
 - ii) Explain the purpose of storage policy in HDFS and give **THREE** examples of the storage policies supported.
(16 marks)
- b) Describe **FOUR** principal features of a NoSQL storage device that offer an advantage over a traditional relational database system in handling big data.
(9 marks)

B6.

- a)
 - i) Explain the speed consistency volume (SCV) principle for distributed data processing.
 - ii) Explain why the SCV principle is important in guiding the design of a real-time big data processing system.
(16 marks)
- b) Describe the following three data storage techniques:
 - i) Block storage;
 - ii) File storage;
 - iii) Object storage.
(9 marks)

End of Examination