

BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 6 Professional Graduate Diploma in IT

IT AND THE ENVIRONMENT

Wednesday 4th October 2023 - Afternoon

Answer **any** THREE questions out of FIVE. All questions carry equal marks.

Time: THREE 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.

Your organisation is planning the deployment of new user devices, and the disposal of old equipment. Your Chief Technical Officer (CTO) has asked you to evaluate the environmental impact of the activity.

- a) Discuss **FOUR** actions you could take prior to the purchase of the items to ensure the lowest possible environmental impact.

(16 marks)

- b) Discuss **THREE** actions you could take for the disposal of the old equipment.

(9 marks)

A2.

Your Chief Technical Officer (CTO) has asked you to investigate the embodied and potential operational carbon emissions of your planned new data centre.

- a) Explain and provide **TWO** examples of embodied and operational carbon emissions as they apply to data centre construction and data centre operations.

(10 marks)

- b) Identify ISO standards that will help to understand operational carbon, and briefly discuss activities that may help to reduce operational carbon.

(9 marks)

- c) Describe what construction materials could be present in the building fabric of a data centre and some possible lower carbon replacements.

(6 marks)

Section B
Answer Section B questions in Answer Book B

B3.

- a) Define what is meant by Remote Sensing and list **FOUR** of its types.

(12 marks)

- b) A company is using remote sensing to monitor the change of use in forest areas in South American countries. It is going to expand its work to cover more countries. The company has a small data centre close to the city centre, to manage and process the data. The data centre is old and cannot support this extra work.

One manager suggests that the company should build a new, larger, data centre further away from the city centre to replace the current one. Another manager suggests using Cloud Computing instead of building a data centre.

Discuss the environmental advantages and disadvantages of these two suggestions. Explain which suggestion may be the better environmental option for the company and why.

(13 marks)

B4.

- a) Discuss the benefits of IT in the energy sector. Include examples to illustrate your answer.

(10 marks)

- b) A university is moving from its current buildings in the centre of a city. It is developing a new campus, further from the city centre. The university has decided to build an environmentally friendly campus using smart devices.

Identify **FIVE** types of sensors that could be used in these smart devices. Discuss how **each** sensor will help to improve the environmental impact of the new campus.

(15 marks)

B5.

- a) Employees at a large software company worked at home during the pandemic. Many staff still work at home. The company's management want all employees to return to work in the offices, full time. The employees are going to meet with management to ask for rules to allow remote working from home.

To help everyone prepare for the meeting, write a short report that discusses the advantages and disadvantages of remote working, for the environment and the company.

(15 marks)

- b) Define the Internet of Things (IoT) and describe **TWO** different communication protocols that the IoT devices can use.

(10 marks)

END OF EXAMINATION