

BCS THE CHARTERED INSTITUTE FOR IT

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

IT AND THE ENVIRONMENT

Wednesday 6th October 2021 – Morning

Time: THREE hours

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

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.

You are the Information Services Director of a large commercial organisation. The Board of your company is discussing measures which will allow the Information Services section in the company to significantly reduce its carbon footprint. This will be achieved by switching to more efficient technologies and operational processes.

One member of the Board refuses to agree to the measures being proposed, without further evidence.

Identify **FIVE** measures that the company can take to reduce its carbon footprint. Discuss the commercial benefits of these measures to help convince the Board member to change their position.

(25 marks)

A2.

Describe how you would plan and carry out an Environmental Impact Analysis for each of the following five areas of IT service provision.

- a) Desktop computing hardware;
- b) Local area networking;
- c) Data storage;
- d) Office based printing;
- e) Mobile broadband.

(25 marks)

Section B
Answer Section B questions in Answer Book B

B3.

- a) Explain the environmental impact of the different parts of the lifecycle of a typical smartphone. Your answer should discuss why the short life of smartphones is a particular problem.

(10 marks)

- b) There is a lot of interest in the idea of the “circular economy” where manufactured products are reused, repurposed and recycled to extend their useful life.

At the centre of the circular economy is the way that products are used in their original form, doing the job for which they were built for as long as possible. The products are then moved to a similar task (reuse). When reuse is no longer possible, the product is used for a different purpose (repurpose). After that stage, the component parts are recovered and used again (recycled).

Discuss the particular challenges which might arise from applying the circular economy concept to the field of IT.

(15 marks)

B4.

- a) Briefly explain how remote sensing devices are used to validate the modelling of climate change in the polar regions.

(5 marks)

- b) You have been selected to design a low-cost (less than £500) remote sensing device for an environmental charity. The devices will be used to monitor agricultural land use.

You should assume that suitable communications devices and central processing IT are available. Your task is to design the device with sensor equipment. Provide an overview of your design, showing how it will operate, the equipment you will require and the data you expect to obtain.

(20 marks)

[Turn Over]

B5.

You have been assigned the task of finding the energy use of your current company's IT provision.

You have been directed to a website that requires you to provide the number of:

- Server Rooms.
- PCs, laptops, tablets and monitors.
- Network hubs, switches, routers.
- VOIP phones.
- Printers, copiers, scanners.

The website uses typical data for these categories; for example, there are data values for a typical server room and a typical PC. The tool assumes that the company has a standard 8 hour working day.

Estimates are provided for the following:

- **Total and Analysis** – results for energy use, energy cost and carbon dioxide emissions broken down by category of device in the list above.
- **Energy Use** – broken down by category of device.
- **Energy Cost** – broken down by category of device.
- **CO₂ Emissions** – broken down by category of device.

You have collected information from around your organisation and entered the data in the website. You are now preparing a report to management about the outputs.

- a) Describe the key points you would include in a commentary on your results. Pay particular attention to the overall accuracy of the method and what this might mean for any decisions taken. You should also include any research you would wish to carry out to support your report.

(15 marks)

- b) Users are allowed to modify the estimates that are used in the system, e.g. energy use for different devices and the hours per day they are in use. This makes the estimates more closely related to a user's own company. How would you use this additional feature and what are the benefits and drawbacks?

(10 marks)

End of Examination