BCS THE CHARTERED INSTITUTE FOR IT

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

IT AND THE ENVIRONMENT

Wednesday 5th October 2022 – Afternoon

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

Time: THREE hours

Answer any <u>Section A</u> questions you attempt in <u>Answer Book A</u>
Answer any <u>Section B</u> questions you attempt in <u>Answer Book B</u>

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.

The global pandemic has led to an increase in the necessity of working from home and avoiding social contact.

a) Describe **TWO** positive and **TWO** negative environmental impacts which could occur as a result of the increased number of people working from home.

(16 marks)

b) Discuss how an organisation would seek to minimise the negative environmental impacts of working from home.

(9 marks)

A2.

With travel across the world severely restricted by the COVID-19 virus, increased emphasis has been placed on the ability to use remote sensing techniques to detect environmental change.

Write an article for a newspaper describing to a general audience how **THREE** forms of remote sensing can deliver useful information about environmental change without the need for physical access by research scientists.

(25 marks)

Section B
Answer Section B questions in Answer Book B

B3.

a) An organisation needs to expand its data centre provision and is considering two options for its future data centre operation:

   i) Building its own data centre using the local mixed renewable/non-renewable energy sources, on a new site close to the head office.

   ii) Buying storage space from a commercial provider which runs data centres in a few countries across the world, most of which use 100% renewable energy.

   What are the benefits and drawbacks of each of these alternatives?

(15 marks)

b) The organisation has decided to use a remote data centre provider which will mean its existing local data centre is to be taken out of use. Explain what the organisation should do to dispose of the equipment in an environmentally sustainable way.

(10 marks)

B4.

a) Explain how smart grid technology is used to manage energy use in a home situation. Identify the additional equipment which the customer will need to install in order to make the system work, and the changes the energy supplier will have to make to their systems.

(15 marks)

b) How could the installation of smart meter technology in each home make users think differently about their energy use?

(10 marks)

B5.

A national government is improving the road and air communication with the remote areas of the country. These areas are separated from the main areas of the country by high mountains, making the roads liable to flooding and snow blockages, and storms make air travel difficult to provide.

It has been decided that a system of sensors is needed to monitor the weather conditions in real time and to provide early warnings of rain and snowstorms.

a) Explain the main components of such a system, showing how these components communicate with each other and with a centralised monitoring centre. State any assumptions that you make.

(15 marks)

b) What additional benefits could be gained from adding data sources from outside the country provided by wider network connectivity?

(10 marks)

End of Examination