BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT

PRINCIPLES OF INTERNET TECHNOLOGIES

Tuesday 26th April 2022 - Morning

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

Time: TWO 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.

A1.

Write JavaScript code to do the following:

- Prompt the user to enter numbers one at a time until they enter the number -999 (-999 should not feature in the calculations below).

- Calculate the total of the numbers entered.

- Calculate the largest number entered (assume the largest possible number the user can enter is 999999).

- Calculate the lowest number entered (assume the smallest possible number the user can enter is -999999).

- Calculate the number of times a number is entered.

- Output the total, the number of times a user entered a number, the largest number, and the smallest number.

For example, if the user entered the numbers 10, 30, 20, -999, then the output would be:

Total of the numbers entered: 60
No of times the user entered a number: 3
The largest number entered: 30
The smallest number entered: 10.

(25 marks)

A2.

a) Define what a usability issue is in the context of the development of a website. Provide **THREE** examples of usability issues.

(8 marks)

b) What is the difference between a website and a web application?

(4 marks)

c) In regard to a web application, what is the development stage and what is the production stage? Outline **ONE** key thing that a developer must do in each stage.

(6 marks)

d) What is CSS and how does it work with HTML?

(4 marks)

e) What is the difference between a JavaScript framework and a JavaScript library?

(3 marks)

A3.

    a) What does W3C stand for and what does it do?

                                (4 marks)

    b) With the aid of a diagram, explain how the Document Object Model (DOM) treats an HTML page as a tree structure.

                                (8 marks)

    c) What is a web service and why does it use XML?

                                  (4 marks)

    d) What is an XML parser?

                                  (4 marks)

    e) What does XSL stand for and what is it used for?

                                  (5 marks)

[Turn Over]

Section B
Answer Section B questions in Answer Book B

B4.

a) Expand **each** of the following acronyms:

    i)   HTTPS
    ii)   IMAP
    iii) IPsec
    iv) RSVP
    v)   OSPF
    vi) POPv3
    vii) ARP.

(7 marks)

b) Map the seven protocols given in part a) above to the seven layers of the TCP/IP model.

(5 marks)

c) What are the similarities and differences in the main features of TCP and UDP?

(5 marks)

d) Briefly describe the difference between IPv4 and IPv6. Why would IPv6 be used instead of IPv4?

(4 marks)

e) Explain the difference between TCP/IP and the OSI Model. A diagram may be helpful.

(4 marks)

B5.

a) Expand the following acronyms in the context of a mobile/cell phone operation:

    i)   EDGE
    ii) GSM/CDMA
    iii) LTE
    iv) 5G
    v) WAP.

(5 marks)

b) For **each** of the following five network utility tools, describe their purpose and explain how they can be used to assist a network administrator in determining performance issues within a computer network.

    i)   ARP
    ii) Netstat
    iii) Nslookup
    iv) Ping
    v) Wireshark.

(15 marks)

c) Outline **TWO** routing methods used on the Internet.

(5 marks)

B6.

a)
    i) Define what is meant by a proxy server?

(1 marks)

    ii) Provide **THREE** benefits of using a proxy server.

(3 marks)

b) What are the differences between a Static and a Dynamic Website?

(10 Marks)

c) Explain the role of DNS in the operation of the Internet.

(5 Marks)

d)
    i) Outline **THREE** threats a company can face against their computer network environment from an external attacker.

(3 marks)

    ii) How can a company protect themselves from the threats you identified in part i)?

(3 marks)

End of Examination