BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 4 Certificate in IT

INFORMATION SYSTEMS

Wednesday 22nd March 2017 – Morning
Time: TWO hours

Section A and Section B each carry 50% of the marks.
You are advised to spend about 1 hour on Section A (30 minutes per question) and 1 hour on Section B (12 minutes per question).

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 2 questions (out of 4). Each question carries 30 marks.

A1

A business man has bought a farm by the sea and developed a new campsite containing on-site caravans and tent pitches which can be booked. Each caravan is given a unique number and description. Each tent pitch will also be uniquely numbered. He requires a new on-line system to deal with enquiries and bookings. Customers will log on and enter the required date and number of weeks indicating whether they wish to book a caravan or a tent pitch. The system will check and confirm if the required dates are available. If the dates are available, the customer will be asked if they wish to continue with the booking and to enter their personal details. The system will also require a deposit to be paid using a secure on-line payment system. When the deposit is received a confirmation invoice will be emailed to the customer detailing the outstanding payment which must be paid four weeks before the arrival date.

a) List the external entities, processes and data stores in the above scenario and draw a high level logical data flow diagram.

(12 marks)

b) Identify the systems entities and relationships and draw an entity relationship diagram dealing with the booking process only.

(12 marks)

c) Briefly describe the role and skills of the following:

i) System analyst/designer **(3 marks)**
ii) Programmer **(3 marks)**

A2

a) Briefly describe the following methodologies:

i) Waterfall **(5 marks)**
ii) Object oriented **(5 marks)**
iii) Agile **(5 marks)**

b) Briefly describe **FIVE** different fact finding methods giving advantages and disadvantages of each

(**5 x 3 marks)**

A3

a) What makes a good screen design? Discuss the techniques that can be used to assist the users.

(10 marks)

b) Draft a series of on-line screens depicting the booking process in question A1, displaying available dates and indicate the validation of each field.

(10 marks)

c) Describe the theory and main features of a relational database.

(10 marks)

A4

a) Discuss how a testing strategy should be prepared. Include various techniques which could be used and describe the difference between black and white box testing.

(8 marks)

b) Briefly describe the advantages and disadvantages of the following:

i) Stage implementation **(4 marks)**
ii) Direct implementation **(4 marks)**
iii) Parallel implementation **(4 marks)**

c) Outline measures you would use to protect data from malicious and accidental loss/access.

(10 marks)

Section B
Answer 5 questions (out of 8). Each question carries 12 marks.

B5

Using the BCS Code of Conduct as a starting point, state how you would expect a computing professional to behave in the work place. **(12 marks)**

B6

Using the following selection of numbers:

1,2,3,4,5,1,2,5,1,1

Define, and show with full workings, what is meant by:

a) Mean **(4 marks)**
b) Mode **(4 marks)**
c) Median **(4 marks)**

B7

Discuss **THREE** different types of multimedia that could be used to enhance a web page that a school wishes to use for advertising and promotion of the school.

(3 x 4 marks)

B8

Internet of Things (IOT) sensors can be used as a source for gathering data.

a) Define what is meant by Internet of Things **(4 marks)**

b) Using either a medical or commercial example, describe the type of sensors that could be used and the type of data that could be collected. **(8 marks)**

B9

Describe what is meant by the following management structures

a) Matrix **(6 marks)**
b) Hierarchical **(6 marks)**

B10

By providing examples relevant to a small retail company, define what is meant by the following terms:

a) Data **(2 marks)**
b) Information **(2 marks)**
c) Strategic data **(4 marks)**
d) Operational data **(4 marks)**

B11

What structures and procedures would you put in place to ensure that all documentation generated during a project was to the highest standard.

(12 marks)

B12

Without reference to cost or time, discuss the advantages and disadvantages of a prototyping technique of your choice.

(12 marks)