

BCS THE CHARTERED INSTITUTE FOR IT
BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 4 Certificate in IT
INFORMATION SYSTEMS

Tuesday 26th September 2017 – Afternoon
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 team of doctors are opening a new clinic. They require a system to deal with registering patients, arranging and cancelling appointments for existing and new patients, and recording the discussions. Patient details will be recorded and each patient is assigned a unique clinic number. Patients contact the receptionist to arrange or cancel an appointment. When the patient attends the appointment they enter their name and date of birth on a check-in screen. Confirmation will be displayed and the time, room number and clinic number for the appointment displayed. After the appointment the doctor enters the details of the consultation and prescriptions provided.

- a) Using the above description
 - i) Draw a Context Diagram **(4 marks)**
 - ii) Draw a High Level Dataflow Diagram **(10 marks)**

- b) There are several methods for analysing systems. Describe the stages in the following including techniques:
 - i) A typical waterfall method **(10 marks)**
 - ii) A typical iterative method **(6 marks)**

A2

- a) Describe what should be included in a feasibility report. **(10 marks)**

- b) Discuss how you would manage a large information systems project which is estimated to take at least one year. **(12 marks)**

- c) Briefly explain the following elements in object-oriented analysis and design:
 - i) Use Case and Sequence diagrams. **(4 marks)**
 - ii) Object Classes and Inheritance, including an example. **(4 marks)**

A3

a) The following is an example of a form used to manually record appointments.

Appointment Date	Appointment Time	Doctor No	Doctor Name	Room No	Patient Clinic No	Patient Name
01/08/16	10.00	D1	Dr Jones	1	123	Mrs Brown
	10.00	D2	Dr Chin	2	234	Mr Smith
	10.30	D1	Dr Jones	1	345	Miss Ball
02/08/16	10.00	D1	Dr Jones	1	234	Mr Smith
	10.00	D3	Dr Peters	3	123	Mrs Brown
	10.30	D2	Dr Chin	2	345	Miss Ball

- i) Describe the three stages of normalisation to provide 3NF (third normal form) **(6 marks)**
 - ii) Identify the normalised relations in the form in part a) indicating primary and foreign keys **(6 marks)**
 - iii) Draw an entity relationship diagram using these relations **(4 marks)**
- b) Briefly discuss the advantages of using a database management system instead of separate files. **(2 marks)**
- c) What are the main functions of a modern database management system? **(12 marks)**

A4

- a) When planning the final installation of a system, discuss how you would organise training, system testing and conversion of existing data. **(10 marks)**
- b) Briefly discuss the advantages and disadvantages of choosing packaged software rather than developing customised software. **(8 marks)**
- c) Discuss measures taken to ensure as high a level of security as possible for the following:
- i) Providing on-line ordering and payment systems over the internet. **(6 marks)**
 - ii) Protecting computers, terminals and networks in a company. **(6 marks)**

Section B

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

B5

Define what is meant by the following cloud computing terms and describe the potential benefits for a small computing company:

- a) Infrastructure as a service
- b) Platform as a service
- c) Software as a service

(3 x 4 marks)

B6

Discuss software solutions that can be implemented to ensure that a blind person can successfully use a web page.

[Focus only on software – there are no marks for discussing hardware related solutions]

(12 marks)

B7

Discuss, using examples, the advantages and disadvantages of closed and open questions in a questionnaire.

(2 x 6 marks)

B8

With reference to an example and the type of information shown, describe:

- a) Pie Charts
- b) Scatter Charts
- c) Bar Charts

(3 x 4 marks)

B9

Discuss methods of ensuring that a data centre is physically secure.

(12 marks)

B10

With reference to the type of decisions made, define:

- a) Operational Management
- b) Strategic Management
- c) Tactical Management

(3 x 4 marks)

B11

Define what is meant by the following terms:

- a) Multimedia
- b) Hypertext
- c) Metadata
- d) XML

(4 x 3 marks)

B12

What is meant by the following software maintenance related terms?

- a) Legacy System
- b) Software Bug
- c) Version Control
- d) Software Patch

(4 x 3 marks)