GCE 2005
January Series

AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Mark Scheme

Computing Specification

CPT5 Advanced System Development

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Computing: Unit CPT5

The following notation is used in the mark scheme

- **; - means a single mark;**

- **/ - means alternative word or subphrase;**

- **// - means alternative answer**

- **A – means acceptable creditworthy answer;**

- **R – means reject answer as not creditworthy;**

- **I – means ignore.**

1.   Any two at one mark each

> Data type;
> Field format;
> Field sizes/Range;
> Example of a data item;
> Name of data item//field name//Table name//attribute name;
> Validation rule;
> Alias;
> Description of item;
> **R** Links between…

                                                                                                      Total   2

2.   (a)   One channel system // single signal sent thro' bandwidth // single stream of data;
>   Whole bandwidth dedicated to one data channel;
>   **R** Single signal sent at a time on its own
>   **R** Uses single frequency   **1**

   (b)   Multi-channel system // several signals sent simultaneously // several signals sent
>   using different frequencies;
>   Several channels combined onto a carrier signal;
>   Bandwidth shared by several data channels;
>   **A** Multiple signals sent at a time on its own   **1**

   (c)   Transmitter and receiver keep in step at all times (by transmitter transmitting
>   synchronising signals periodically).   **1**

                                                                                                      Total   3

3.   (a)   WAN   **1**

(b)   Software cannot be copied;
Customer does not have to keep track of/worry about illegal copies of product on its computers;
The elimination of staff and systems to distribute products;
Help-desk support is simplified when all customers are using the same centrally managed, shared software;
Smaller software development team because different flavours of a product do not have to be developed for customers with different machines, OSs;
Cheaper implementation of improvements, as new software versions only have to be placed on central server;
Faster implementation of improvements, as new software versions only have to be placed on central server //Updates available immediately//Instant delivery – no postal delay;
The elimination of customisation, which means that system integration becomes simpler;
A more efficient feedback loop for getting users' views of suggested enhancements;

Reduces customers' hardware costs;
Reduces customers' storage/hard disk space requirements;
Reduces customers' maintenance support (handling updates//configuring software) requirements;
Access from any computer connected to Internet/network;
A Software cheaper because ....
R Don't have to pay for updates;   **3**
                                                                                          Total   4

4.   (a)
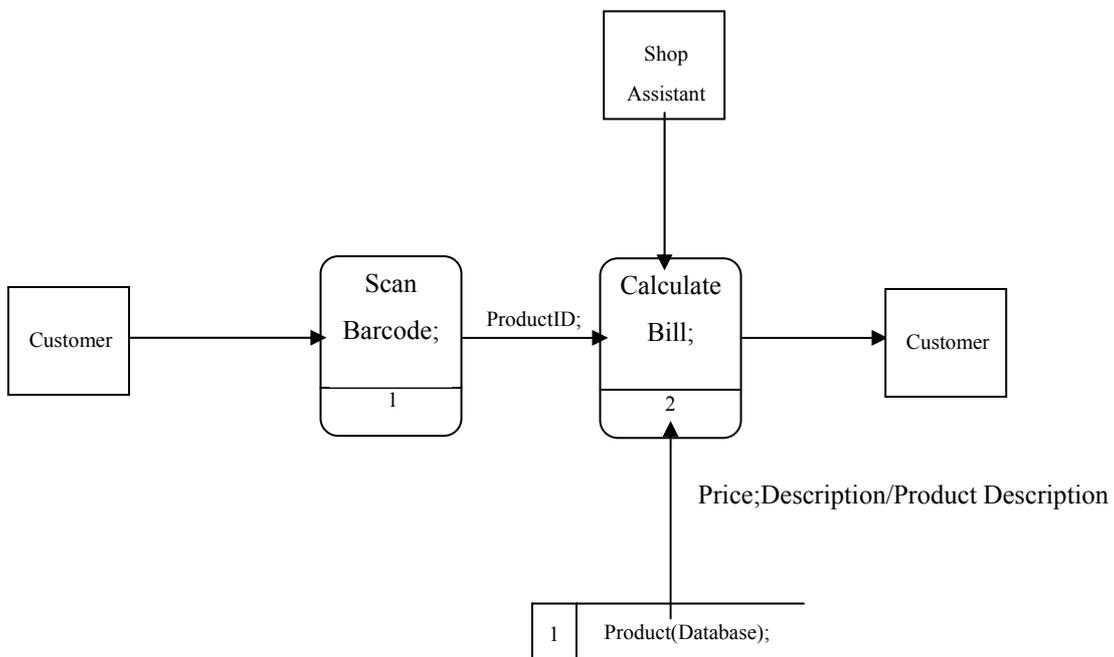
NB Data store must reference **Product;** Processes must begin with a verb and process
2 must be **Calculate Bill**
A Read Barcode for process 1

(b)   Dataflow or DFD ;   **1**
                                                                                          Total   7

5.   (a)   Any three @ one mark each
NB Each way must be different

Database:
Holiday bookings;
Holiday details;
Mailing lists to target customers;
Staff details;
Customer details;
Spreadsheet:
Currency converter;
Computerised accounting;
Staff payroll;
What if modelling/calculations, e.g. profit/loss;
Calculate cost of holiday;

Desktop Publishing
Newsletters to customers;
Holiday brochures;
Posters advertising company/holidays;

Word Processing
Letters/Memos to ....
Invoices;
Newsletters;
R Producing posters

Presentation Package
To create presentations for training staff;
To create presentations for open evenings/customers/shareholders;

Expert System Shells
Matching customer requirements to available holidays;
Itinerary planning;
Guidance of "expert" on how to deal with a situation arising in the field;
Inoculation requirements;
Staff training;   **3**

(b)   Package + Purpose for one mark

Mailing list database//customer database;
Merged with word processed letter;
OR
Spreadsheet accounts;
Inserted into word processed report;
OR
Spreadsheet accounts;
Inserted into presentation package for a presentation;   **2**

Total   5

6.   (a)   (i)   Existing data in old MarkBook file must be copied to the new MarkBook
file;
Source code form of App1 and App2 must be edited so that each is
consistent with new record definition;
New source code forms must be re-compiled to produce new executables
App1.exe and App2.exe;

R App1.exe (& App2.exe) would have to be modified to recognise new
field

R Student names must be entered   **2**

(ii)   App1.exe (and App2.exe) specifications are unchanged yet work has to be
done altering them so that they continue to work with the altered file
MarkBook.dat//App1.exe (& App2.exe) do not need extra field;
Data in existing file needs to be transferred to revised version of
MarkBook.dat;   **1**

(iii) Any two @ one mark each
A Perfective, corrective **R** Adaptive (given in question)
Fixing bugs;
Changing parameters, e.g. VAT rate;
Adjusting performance of system by adjusting buffer sizes, for instances;
Deleting records marked for deletion;
Restoring system from backup;
Backing up system;
Changing hardware;
Deleting users/adding new users;
Changing the number of licences;
Handling upgrades;   **2**

(b)   (i)   Data is made independent of programs//no need to rebuild programs which
do not use the new data;   **1**

(ii)   Allows creation of user views;
Restricts what data a user has access to;
UserID + password system supported by DBMS;
A Access rights if reference made to Update, Delete, Insert   **1**

(c)   (i)   Contains redundant data;
Every determinant is not a candidate key // Not every non-key attribute is a
fact about the key only;
A Answer by example, which states StudentName replicated/duplicated
unnecessarily (must reference StudentName)
R Repeating group
R Student Name shouldn't be there   **1**

(ii)   Student(StudentID, StudentName);
HomeworkAssignment(StudentID, DateOfHomeworkAssignment,
SubjectCode, Mark);
I Table names, minor spelling errors   **2**

(d)   (Systems) Analysis   **1**
                                                                                       Total   11

7.   **R** Title not in a title bar. **I** Alignment

Title;   → | ABC |

Heading font
size must be
larger than
"Your name"

Heading;   →

Registering Your Name

⌐ Sizeable Gap   →

; text; + box;   →

⌐ Sizeable Gap   →

Your name:

Labelled
Button;   →   Send name

I errors in case of
letters and
misspelling
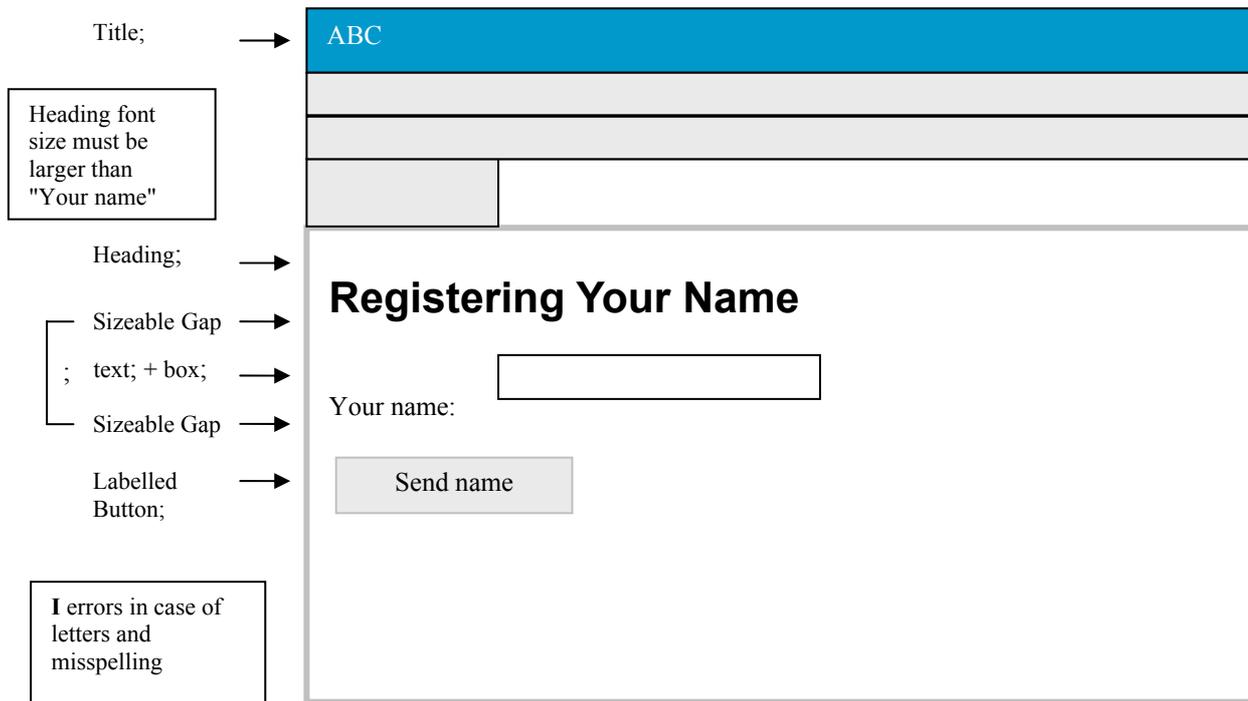
Total 6

8.   (a)   Reading credit card details;   **R** Debit card   **1**

(b)   Printing tickets // printing spectator statistics;   **1**

(c)   Reading barcode (on ticket)//scanning/reading ticket for ticket details // scanning/
reading ticket (barcode) to allow entrance // scanning/reading ticket to check
ticket is valid;
R Scanning ticket // scanning barcode   **A** Scanning ticket...some phrase
                                            implying ticket details obtained
R Reading ticket on its own   **1**

(d)   NB Must be spectator
Identifying banned spectator (by iris pattern) // checking ticket holder is ticket
purchaser // Photographing spectator to be banned;   **1**

(e)   NB Must be spectator
Photographing spectator for **identification** (by facial pattern recognition) //
checking ticket holder is ticket purchaser // checking season ticket holder is
genuine;
R. Photographing spectator on its own   **1**

(f)   Reading details from season ticket holder smart card;
Reading credit card details;   **1**

Total   6

9. (a)   **I** Minor spelling

(i)

Student	;	WorkDone

1

(ii)

Student	;	MarkAwarded

1

(iii)

LifeCycle Phase	;	MarkAwarded
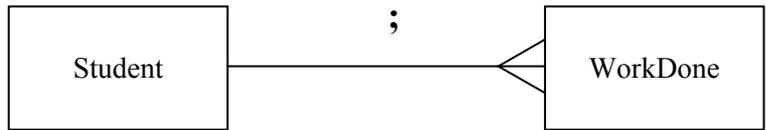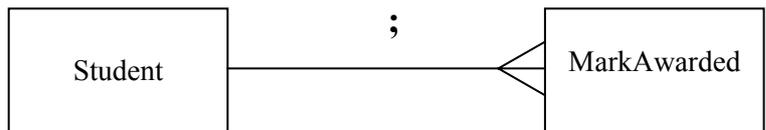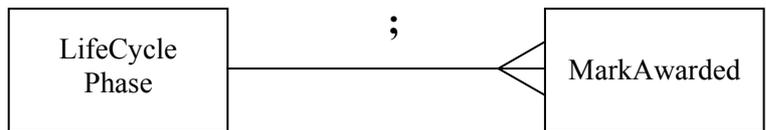
1

(b)   Penalise table name. field name in reverse order once
              R Quotes and additional constructs
              I Table names unless in wrong order or wrongly expressed

(i) ```
Select FirstName, Surname
  From Student;
```
**1**

(ii)

```
Select Student.FirstName, Student.Surname,
                         MarkAwarded.Mark;
  From Student, MarkAwarded;
  Where MarkAwarded.LifeCyclePhaseID = 1;
    And Student.StudentID = MarkAwarded.StudentID ;
Order By Student.Surname;
```

I table names unless incorrect

I table name unless incorrect

I table name unless incorrect

5

Order By Student.Surname Asc
A Ascending
Asc/Ascending must be in correct position
A OrderBy

Total   9

10. (a)   **A** set of rules/procedures;   **1**

     (b)   Bus; **R** Ethernet on its own   **1**

     (c)   Twisted pair//coaxial (cable)//optical fibre//fibre optic;   **1**

     (d)   Need first octet or first and second octet or first, second and third octet to be identical. Also must have four octets.
For example:

        192.168.0.1 | **R** without full stops |
        192.168.0.2
        One mark for four octets;
        One mark for same LAN;   **2**

     (e)   (Use candidate's example from (d))

        (i)   192.168.0;   **1**

        (ii)   1 or 2;   **1**

     (f)   a (unique) address/identifier assigned to network card // (unique) hardware address/identifier;   **1**

     (g)   Any two tasks @ one each
Allocation of port numbers;
Routing a packet/frame/segment to correct application/service;
Splitting messages/data into packets // Disassembling messages // Assembling packets;
Adding TCP headers // Adding sequence nos;
Error handling // sets parity bits;
Checking that transmission successful;
Resending transmission if necessary;
A Sets packet size;   **2**

     (h)   Any one of the following applications for one mark;

        Telnet;
Internet browser;
http (client) // web server;
email;
FTP;
TFTP;
SMTP;
R Non-networked applications such as word processor   **1**

     (i)   Internet Registry // Internet Registrar;
A I.P. Registry/Registrar   **1**

                                              Total   12

END OF CPT5 MARK SCHEME