



ASSESSMENT and  
QUALIFICATIONS  
ALLIANCE

# Mark scheme

# June 2002

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## GCE

## Computing

## Unit CPT5

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## Advanced Systems Development

The following notation is used in this mark scheme

- ; - means a single mark;
  - A – means acceptable creditworthy answer;
  - R – means reject answer as not creditworthy.
- 

**1** Any one for one mark:

Top down (testing);  
Bottom up (testing);  
Black-box (testing);  
White-box (testing);  
Integration (testing);  
Interface/Stub (testing);  
Acceptance (testing);  
Alpha (testing);  
Beta (testing);  
Walkthrough/Dry Run/Tracing/Desk checking;  
Compatibility (testing);  
Performance (testing);  
System (testing);

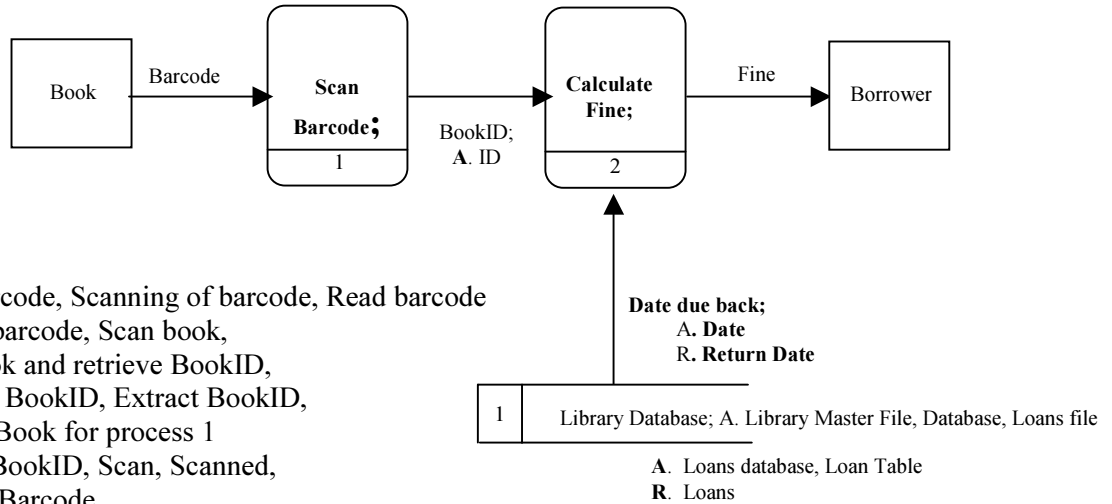
**max 1**

**2** Any two @ one each  
**R.** Specification manual

Installation manual;  
User manual Or Instruction manual;  
Operations manual;  
Training manual;  
(Systems)Maintenance/Technical manual;

**max 2**

- 3 NB process labels must begin with a verb, e.g. scan ...  
 Dataflow labels must begin with a noun.  
 Datastore label must begin with a noun.



- A. Input barcode, Scanning of barcode, Read barcode  
 Decode barcode, Scan book,  
 Scan book and retrieve BookID,  
 Find/Get BookID, Extract BookID,  
 Identify Book for process 1
- R. Decode BookID, Scan, Scanned,  
 Validate Barcode
- A. Compare Date *something*,  
 Compute fine amount  
 Find book in database & Calculate fine for process 2
- A. ID for BookID
- R. Check Date for process 2

5

- 4 (a)(i) **Baseband:** Single /data signal sent at a time Or single message/packet/frame sent at a time Or uses single channel Or one transmission at a time  
 A. Single stream of data;  
  
 over full bandwidth (of the cable) Or occupying full bandwidth (of the cable) Or signal uses all available frequencies;  
 (ignore any additional references which are bits, 0/1 in any part of the above)  
 R. Single bits sent at a time  
 R. Only works over short distances

- (ii) **Broadband:**  
 Several /data signals sent simultaneously Or several messages/packets/frames simultaneously Or more than one signal occupies bandwidth ;  
 Each at a different frequency Or in a different channel Or in a different time slot;  
  
 Or  
  
 Multiple channels used;  
 Each at a different frequency Or in a different time slot;  
  
 Or signal(or equivalent) uses only one frequency Or signal(or equivalent) uses only part of bandwidth;;  
  
 R. fast connection  
 R. Video, sound and text .....  
 R. ADSL, cable examples, etc

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**(b)(i) Two reasons:**

- Wide area networks expensive to install;
  - Wide area networks expensive to maintain;
  - Wide area networks involve long distances;
  - Can allow multiple data streams to keep down costs
  - Or can share transmission medium to keep costs down;
  - Many channels needed to cope with high volume of traffic
  - Or enables more users to use network without experiencing congestion;
  - R.** faster
  - R.** can work over longer distances
  - R.** More than one user will want to use it simultaneously
  - R.** Cheaper, more efficient
- max 2**

- (ii) First mark: (More packet) collisions take place;  
Stations attempting to send at the same time;  
Each station broadcasts to every other one;  
Some stations may be attempting to broadcast at the same time;
- Second mark: Packets need to be sent again;  
Station has to retransmit (after a random delay);
- max 2**

- (iii) First mark: Exclusive bus connection (made temporarily between sender and receiver)  
Or data transfers take place in turns  
Or switch connects just sender and receiver  
Or collision domain limited to two stations  
Or switch splits bus LAN into several smaller segments  
Or switch allocates a time slot to each transmission  
Or each host/computer/station/workstation/node has its own link on which one packet at most can travel  
Or switch allows a dedicated connection/pathway to be set up when a computer wishes to send information to another  
Or switch separates work stations (in different segments) and only passes packets between segments when necessary  
Or switch (ports) act as bridges which segment network;
- Second mark: therefore collisions cannot occur (between two stations)  
Or collisions reduced;
- 2**

- (c) NB Deduct one mark if get units wrong  
40 Mb/s;;  
**A.** At least 40 Mb/s,  $\geq 40$  Mb/s  
**R.**  $< 40$  Mb/s,  $\leq 40$  Mb/s, anything which isn't 40

**2**  
**Total 12**

5(a)(i) One technique @ 2 marks

- NB     **R.** Barcode because not enough info can be encoded  
          **R.** Scan picture  
          **R.** OMR  
          **R.** Picture of person on passport scanned and compared to actual person

Use OCR/MICR;

Passport printed with information in machine-readable characters(form)

Or (*something on*) passport scanned to extract information;

Use smart card/Microchip//Chip on card;

**R.** Chip on its own

Smart card/microchip holds passport holder's information

Or passport holder's details extracted from smart card/microchip;

Use Magnetic Stripe (reader);

Passport holder's information encoded magnetically in stripe attached to passport

Or information extracted from magnetic stripe Or stripe swiped to extract information;

**max 2**

(ii) One technique @ 2 marks

- R.** embedded microchip  
**R.** DNA, Ear-print, Speech recognition

First mark: Iris scan/recognition//(Video) camera captures image of eye;

Second mark: Iris pattern uniquely identifies a person;

Measurement of iris produces a unique code;

Matched with a database record of person (if it exists);

First mark: Face scan(recognition)//(Video) camera captures image of face;

Second mark: Image compared with database of images;

Person identified by a match;

First mark: Retina scan/recognition//(Video) camera captures image of eye;

Second mark: Retina pattern uniquely identifies a person;

Measurement of retina produces a unique code;

Matched with database record of person (if it exists);

First mark: Fingerprint scan(recognition)

Second mark: Fingerprint uniquely identifies a person;

Measurement of fingerprint produces a unique code;

Matched with database record of person (if it exists);

First mark: Palm print scan/recognition;

Second mark: Palm print uniquely identifies a person;

Measurement of palm print produces a unique code;

Matched with database record of person (if it exists);

First mark: Hand print scan/recognition;

Second mark: Hand print uniquely identifies a person;  
Measurement of hand print produces a unique code;  
Matched with database record of person (if it exists);

First mark: Veins pattern/print scan/recognition;

Second mark: Veins pattern uniquely identifies a person;  
Measurement of veins pattern produces a unique code;  
Matched with database record of person (if it exists);

**max 2**

**(b) Two advantages**

Much more difficult to forge an identity Or more secure (A. Less chance of fraud);  
Don't have to remember to carry passport;  
Getting a replacement passport//renewing passport no longer a problem//no passport to lose//no passport to have stolen//eliminates illegal passport trade;  
Reduces delay at passport control//Identifying a person is quicker;

**R.** Reduces manpower

**max 2**

**(c) (i) Two benefits @ one each**

Ignore DNA, etc.  
Reduce instances of fraudulent transactions/credit card fraud/debit card fraud/social security payments;  
Undesirables can be excluded from an event/venue, e.g. banned football hooligan;  
Police can confirm identity of a person;  
Easier to monitor the movements of wanted criminals/suspects/known terrorists;  
... can spot/identify criminals ..;  
Easier for government agencies to monitor the movements of its citizens;  
Illegal immigrants can be detected;  
(In the event of a disaster,) victims can be identified quickly/more easily;  
Reduces instances of people voting illegally;  
Ensures that people are who they say they are;  
Enables access control to be implemented naturally;  
Organisations will not have to set up their own identification systems//..standardisation...;  
A. Shops/etc. can identify customer & target customer as they enter shop if benefit stated clearly

**max 2**

**(ii) One reason @ one mark**

Danger that monitoring of citizen's movements could become a matter of routine thus infringing privacy Or invasion of privacy Or Big Brother effect";  
Corrupt authorities (could misuse biometric data)//Citizen may not trust authorities//Data may be misused/changed;  
Could be used to track movements for no good reason;  
**R.** May be illegally accessed  
**R.** Hacking on its own

**max 1**

**Total 9**

6 (a) Mail merge;  
R. Letter wizard 1

(b) Three formatting features @ one each  
R. editing features such as cut/copy/paste  
R. printing, saving, loading, inserting

Use templates//style sheets

(Setting) font (type); R. Setting size of text

(Setting) font size;

(Use of) underline/embolden/italicise/colour//font style

(Setting) indents/indentation/alignment;

(Setting) margins/page size;

(Setting) paragraph style Or examples such as centring text//justification;

Page numbering;

Header/footer;

Footnote;

Bullets;

(Setting) Borders;

(Setting) background/watermark;

R. Columns, Tables max 3

(c) One feature @ one mark

Label feature (A. Label wizard);

Ability to position correctly on the page

(so that window envelopes can be used);

Setting page size (to size of envelope) (if not given in (b));

Envelope template Or templates;

A. Page layout, Envelope size, Set paper size, Envelope wizard

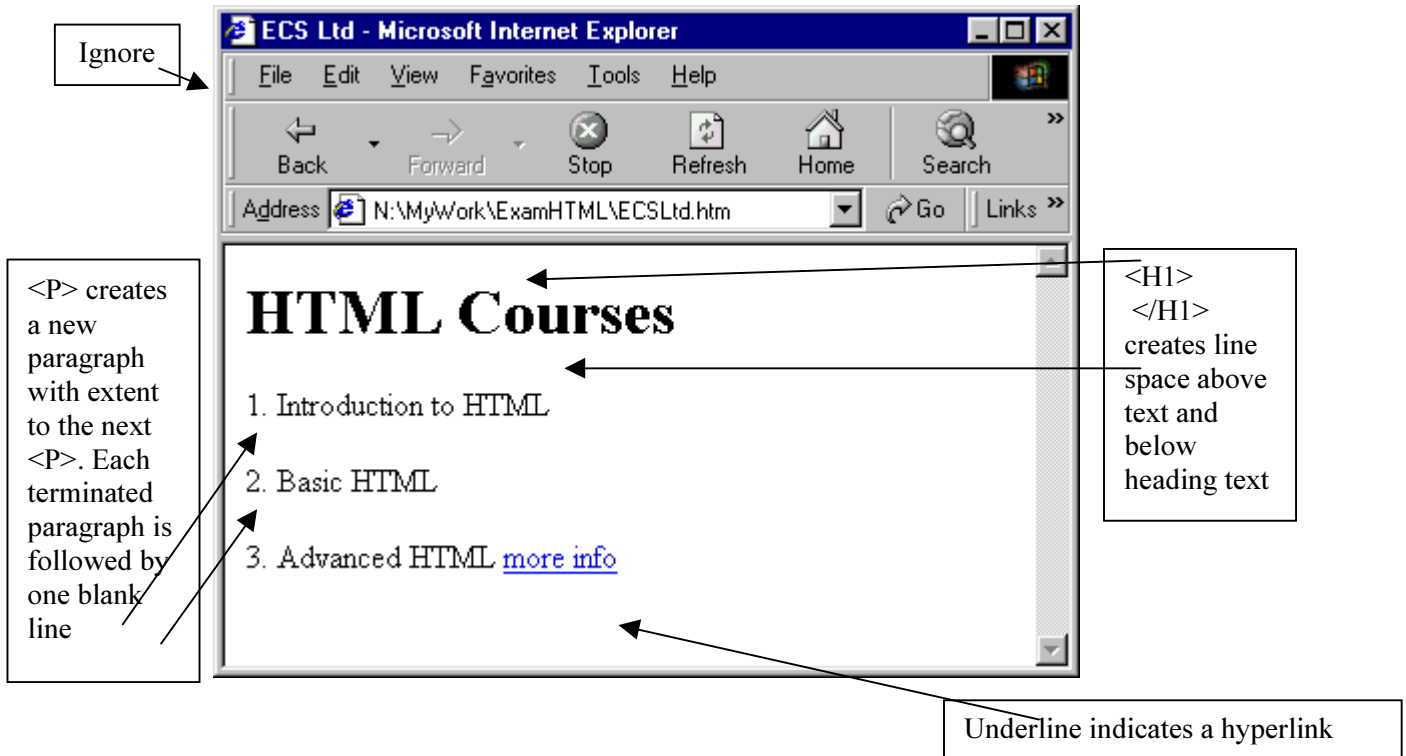
R. Print process, frames, tray selection, print envelope function max 1

**Total 5**

- 7 (a) World-wide collection of (LANs)networks/computers/servers/gateways/routers; using a common/single protocol //using TCP/IP; NB Must convey idea of world-wide, e.g. global.  
**R.** ISP something  
**R.** WAN, network of networks, over continents

2

(b)



Correct title bar – ECS Ltd (Ignore case, but must be in a bar at top of page);  
 Correct Heading – HTML Courses (Ignore case but must be followed by blank line and must be larger letter case than rest of text);  
 Correct layout for text – 3 spaced paragraphs vertically aligned with each other (ignore alignment with heading, ignore letter case). **MUST BE A BLANK LINE** between bullets 1 and 2 and bullets 2 and 3;  
 Correctly positioned and labelled hypertext link – more info;  
 Indication that it is a hypertext link;

**R.** <http://www.ecs.co.uk/main/page.html> unless in correct position (where more info should be) and the underline is labelled *link* then award one mark for the underline in the correct position on page underneath <http://www.ecs.co.uk/main/page.html>. **5 marks**

- (c) **R.** ecs – explanation, co – explanation, uk – explanation.  
 http – protocol;

[www.ecs.co.uk](http://www.ecs.co.uk) / [ecs.co.uk](http://ecs.co.uk) – fully qualified domain name Or domain name Or world wide web server/site; A. Domain, User friendly form of IP address, **R. web site address, World Wide Web address**

[www](http://www) – world wide web server/computer/site Or (alias for) root folder of web site; **R. world wide web on its own**

main – directory off the root at the web site Or sub-folder (of web site) Or sub-directory (of web site) Or directory (of web site) Or folder to look in Or location of target file;  
 page.html – file(page) containing html Or actual/web page to be loaded/viewed Or page to be loaded/viewed;

/main/page.html – path (on server) to web page;

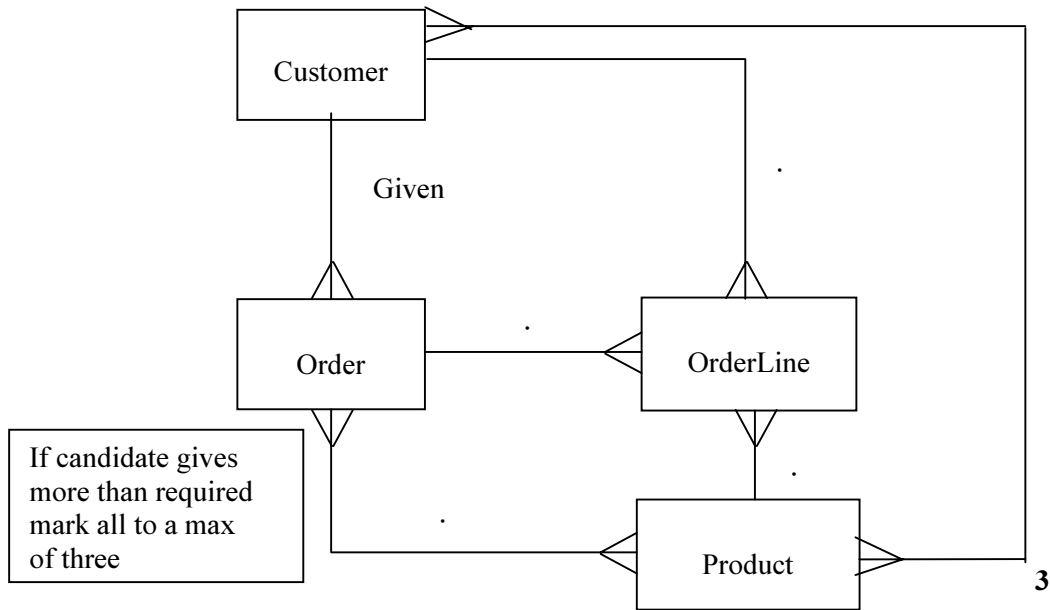
**4 marks**

**Total 11**

Don't give world wide server mark twice



8 (a)



(b) NB Order of attributes is immaterial

(i) 1 mark for primary key 1 mark for other attributes unless additional attributes

A. Quantity, StockLevel, Stock, AmountInStock, Amount, NumberInStock, Qty\_Stock, Qty  
 A. Description

Product (ProductId, ProductDescription, QuantityInStock) 2

(ii) 1 mark for primary key 1 mark for other attributes (unless extra other attributes)

A. Name , Address, (Customer)TelephoneNo, (Customer)TelephoneNumber, TelNo,  
 (Customer)TelNumber, R. Phone, Telephone, A. multiple lines for address including  
 postcode, etc, A. breakdown of name into forename, surname.

Customer (CustomerId, CustomerName, CustomerAddress, CustomerTelNo); 2

(iii) 1 mark for primary key 1 mark for foreign key CustomerId 1 mark for other attributes unless extra other attributes

Order (ABCOrderNo, CustomerId, CustomerOrderNo,  
 OrderHasBeenDespatched) 3  
 A. Despatched, OrderDespatched,  
 OrderStatus

(iv) 1 mark for primary key 1 mark for ABCOrderNo, LineNo,  
 1 mark for foreign key ProductId, 1 mark for QuantityOrdered, unless additional attributes

A. OrderLineNo, OrderLineNumber, LineNumber, Line  
 A. Quantity, Amount, Qty, Number

OrderLine (ABCOrderNo, LineNo, ProductId, QuantityOrdered) 4

(c)	Attributes must correspond with table attributes given in part (b)	A. Yes, 'Yes', "Yes", Y, 'Y', "Y", Despatched, 'Despatched', "Despatched" in place of True	
	Select CustomerName (Score zero for extra attributes)		1
	From Order, Customer (Each extra table cancels one of these marks)		1 + 1
	Where Customer.CustomerId = Order.CustomerId		1
	And Order.OrderHasBeenDespatched = True		1
	Order By ABCOrderNo		1

Mark first Select statement, but give credit for Order By ABCOrderNo. Associate **And** with one of the conditions.

OK for parts of statement to be on same line, e.g. Select CustomerName From Order, Customer

- A. Customer.CustomerName
- A. Order By ABCOrderNo ASC
- A. Order By Order.ABCOrderNo
- A. OrderBy for Order By
- A. the use of aliases, e.g. Select D1.CustomerName  
From Customer D1, Order D2  
Etc.
- A. "Customer.Db" Or Customer.Db , "Order.Db" Or Order.Db
- A. OrderHasBeenDespatched = True
- A. Order By ABCOrderNo Ascending
- A. From tbl Customer, tbl Order

6

**Total 20**