

GCE 2004

June Series



Mark Scheme

Computing

Unit CPT5

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.

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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. | (a) | Building a working model;
Building a demonstration system;
Building a simplified version;
Building a rough copy;
Building a trial piece of software;
A Interface trial
A Building a sample of proposed system
A Build a dummy version
<i>Any one for one mark</i> | 1 |
| | (b) | No c/f
Clarify user's requirements;
Perform risk analysis;
Find solution to a particular problem;
Check solution can handle workload;
Test/try a solution(or equivalent); R To try <u>it</u> out
Evolve a solution through iterative development;
Discover errors in design;
Discover problems;
To obtain user/customer feedback//For user/customer to perform evaluation
<i>Any one for one mark</i> | 1 |
| Total | | | 2 |

2. (a) NB Must be an automated system(=control) or a system that provides real time data(=monitoring)
Flight control software;
Software controlling life support systems;
Software controlling hazardous materials with potential for exposure to humans;
Software controlling mechanical equipment which could cause death through impact/crushing/cutting;
Any software which provides information to operators where an inaccuracy or misinterpretation of the data could result in death/injury through an incorrect decision;
A Air traffic control, Railway signalling system, traffic lights, heart rate monitor, drip feed controller for administering drugs
Any two at one mark each 2
- (b) (i) Acceptance testing is specified/performed by “customer” (against original specifications); 1
- (ii) Poorly/incorrectly specified system//inadequate/inaccurate systems analysis;
Poor training of staff using system//Staff use system incorrectly;
Situation outside specification occurs or example which relates explicitly to specification or similar e.g. more users attempt to log on than should;
A Virus has entered system//Malicious misuse
R Design flaws, hardware failure, inadequate testing
R Data corrupted 1
- (iii) NB Name required
System testing;
Alpha testing
Beta testing;
Performance testing;
A Black box testing, white box testing, integration testing, unit/module testing, top-down testing, interface testing
R Phased testing, bottom up testing
Any one for one mark 1
- Total 5**

3.

Data

Can proposed system cope with increased volume of data;
 Can conversion of data files, et cetera, be done easily;
 Can data be exchanged easily between proposed system and existing system;

Hardware

Will proposed system be compatible with existing hardware(facilities)//what are hardware requirements of proposed system;

Impact on existing system

Can proposed system be used without the need to purchase additional resources;

What parts of the existing system will be made redundant;

Does proposed system duplicate an existing system;

Compatibility

Is proposed system compatible with existing software (worth one mark but only if " ..existing hardware" and/or "...existing software" mark not already given otherwise zero);

Does proposed system use same standards as existing systems, e.g. user interfaces;

Is proposed system compatible with existing procedures in larger company;

Can proposed system be networked;

Is proposed system scalable//Can proposed system cope with number of users from large company;

Time taken to bring new system online;

How secure is proposed system;

How many changes will be necessary to proposed system;

Is proposed system's performance speed adequate

Costs

The cost of adapting the proposed system;

The cost of training personnel on proposed system;

Benefits

What benefits will company derive from using the proposed system;

Training/Personnel Issues

The amount of training required on the proposed system;

Usefulness of documentation for the proposed system;

What influence will adopting the proposed system have on the work of existing personnel;

Maintainability

How maintainable is the proposed system;

Legal

Will more licences need to be purchased;

Will existing legislation (e.g. copyright) be infringed//Is there a Data protection Act issue

R Will proposed system meet needs of company//Will proposed system be suitable for job

R How adaptable is proposed system

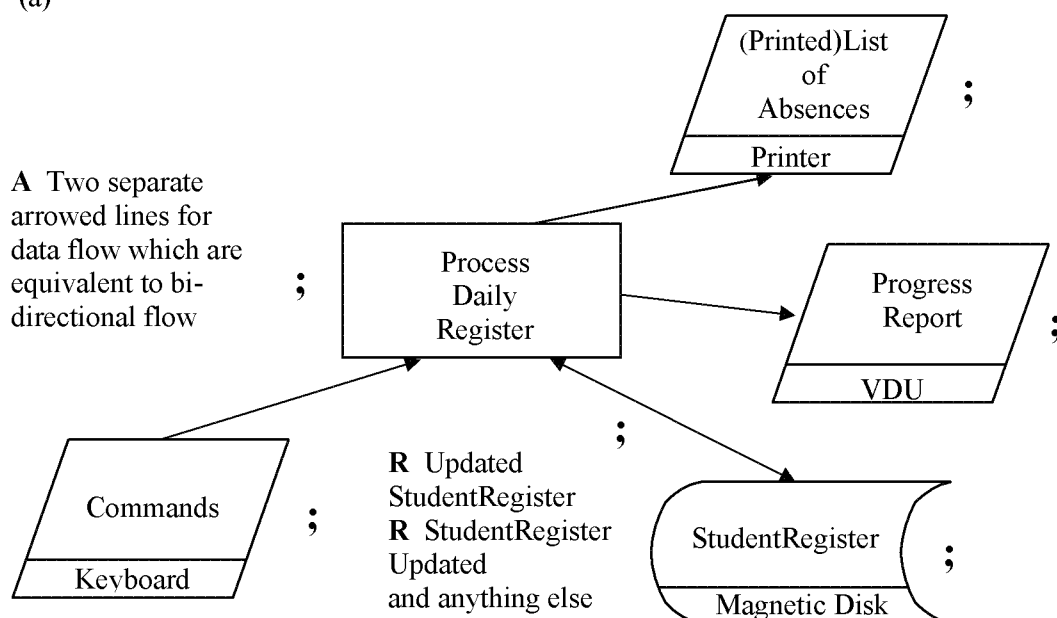
Any five at one mark each

5

Total 5

4. (a) Data Definition Language//DDL;
R DML 1
- (b) NB Order irrelevant
The word "Schema" can be omitted
External/User/Local schema/view;
Conceptual/Logical schema//Schema (on its own is OK);
Internal/Storage schema;
R User Interface, Physical schema 3
- (c) (i) Name and TotalOfFines; (Accept slight mis-spelling/spaces) 1
- (iii) NB Borrowers with FinesOwed > 0 required
surnames and fines owed of borrowers who owe fines; 1
- Total 6**

5. (a)



- 6
- (b) System Flowchart; A. System Flow diagram
R System Diagram and anything else 1
- (c) Optical Mark Recognition//Marks in specific places or its equivalent
//Marks which can be sensed optically;
A. diagram
R. Optical marks
R. Devices e.g. Optical Mark Reader, Optical Mark Recognition Reader 1

Total 8

6. (a) NB Ways must be different.
- Database:**
 Database of stocks of (emergency relief supplies);
 Database of locations of stock;
 Database of relief workers and their skills;
 Disaster events database holding histories of previous disasters to aid work in new ones;
 Central tracing agency database to help find missing people in a disaster;
 Mailing lists to target potential donors;
 Other appropriate; (Candidate must relate use of package to something that charity might reasonably do in its support for humanitarian aid.)
- Spreadsheet:**
 Computerised accounting to keep track of donations;
 What if modelling/calculations, e.g. levels of food stocks and predicted demand so shortages can be prevented after a disaster;
- Desktop Publishing**
 Newsletters to aid workers/people receiving aid;
 Newsletters to raise profile of organisation;
 Newsletters to encourage donations;
 Posters advertising services/meetings;
 Web page creation to... (Candidate must relate use of package to something that charity might reasonably do in its support for humanitarian aid.)
- Word Processing**
 Letters/Memos to(Letters/Memos on their own is enough)
 Producing leaflets for ... (Candidate must relate use of package to something that charity might reasonably do in its support for humanitarian aid.)
 Web page creation to (Candidate must relate use of package to something that charity might reasonably do in its support for humanitarian aid.)
 A Brand Names if recognisable, e.g. Use Word to .
- Presentation Package**
 To create presentations for training field workers;
 To create presentations for fund raising events;
 To create presentations for other appropriate targets (Candidate must relate use of package to something that charity might reasonably do in its support for humanitarian aid.);
- Expert System Shells**
 To explore “what if” in logistics – e.g. if grain shipment is a month late;
 Guidance of “expert” on how to deal with a situation;
 Planning systems;
 Prediction systems; 3
- (b) Not tied to use given in part (a). One mark for bit supplied by each package.
 Marks are independent.
 Mailing list database/spreadsheet;
 Merged with word processed letter;
 OR Spreadsheet accounts/graphs/statistics;
 Inserted into word processed report;
 OR Spreadsheet graphs/statistics/accounts;
 Inserted into presentation package;
 OR Word-processed reports from e.g. field workers pasted into a newsletter using DTP;continued on next page
 A Other combinations if well reasoned but **task** must be explicit
 R Data from database exported to a spreadsheet to be manipulated in a calculation because task is not stated 2
- Total** 5

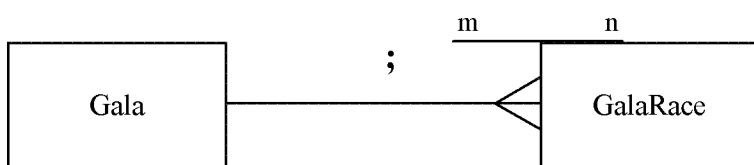
7. Internet Search Engine: General searches//searching for web pages related to essay topic//searching for web sites on essay topic//finding articles/info on essay topic;
R Searching Internet
 Usenet: Specific searches//access to discussions on essay topic//posting questions on essay topic;
R Searching Internet
 IRC: Real time discussion; 3
- Total 3**
8. A. People in place of passenger
- (a) Reading/Getting credit/debit card details//Reading/Getting staff security pass; 1
- (b) Printing boarding pass//Printing ticket//printing passenger boarding list; 1
- (c) Reading passenger details from boarding pass (which have been encoded in barcode)//Reading (barcode on) boarding pass(checking boarding pass is OK)//Obtain information from boarding pass//Reading barcode on luggage label//Reading Staff ID badge;
R. Reading barcode **A.** Reading barcode on boarding pass
A. Ticket in place of boarding pass 1
- (d) Identifying passenger/staff/people (by iris pattern)//Identifying terrorist (by iris pattern); 1
- (e) Photographing passenger's/staff face for identification by (facial pattern recognition)//Double check same passenger when boarding aircraft as went through security control//verify passenger's identity;
R. Photographing passenger's face on its own. Answer must relate to some identification purpose
R. Photographing luggage 1
- (f) Reading details from passport with smart card (for identification purposes)//Reading some details of passenger/staff from a smart card//For some identification purpose;
 Reading credit/debit card details; 1
- (g) Reading passport details (for identification purposes)//Reading details from boarding pass/ticket (May be implied, e.g. to check ...); 1
- Total 7**

9. (a) NB Take note of labelling inside boxes because candidate’s positioning of labels may be opposite to that shown below

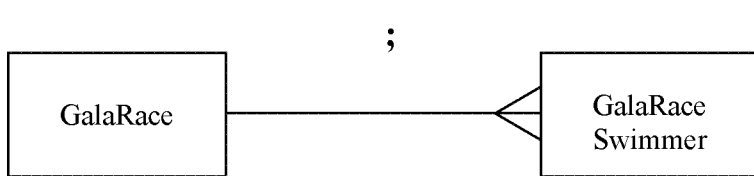
Alternative symbols	one to many	————>>
	one to many	<————>>
	many to many	<<————>>
	one to many	<u>1</u> <u>oo</u>
	many to many	<u>oo</u> <u>oo</u>
	one to many	<u>1</u> <u>n</u>
	many to many	<u>m</u> <u>n</u>

Accept minor misspelling or spaces between parts of entity name.
A. plural names
I. Box outlines

(i)

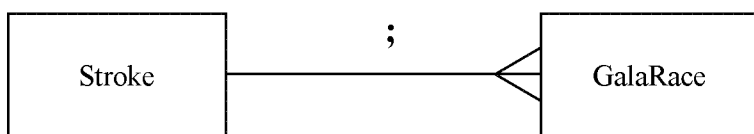


(ii)



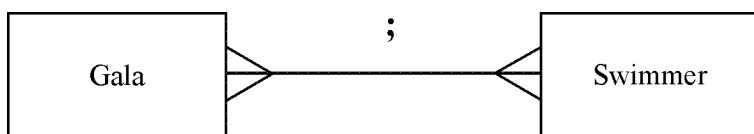
1

(iii)



1

(iv)



1

1

(b) R. Tbl in front of table name - penalise once

(i)
 Select Surname
 From Swimmer
 Where SwimmerNo = 6;

Select Swimmer.Surname is OK
 I. Brackets surrounding attributes
 R Extra attributes, tables, criteria
 I. Quotes around value 6
 I. ;

1

(ii)
 Select SwimmerNo
 From GalaRaceSwimmer
 Where (RaceNo = 5); And (GalaNo = 2);
 Order By TimeRecordedForRace;

I. Brackets surrounding attributes,
 table names in front of attributes
 unless incorrect
 A. Criteria without brackets
 R Extra attributes, tables, criteria in
 this solution but be careful because
 candidate may give an alternative
 involving extra attributes, tables,
 criteria that will work
 I. Quotes around value 5 and value 2

3

A. Asc or Ascending in
 correct place i.e. after
 TimeRecordedForRace
 R. Asc/Ascending in any
 other position and/or with
 other words

(iii)
 Select Swimmer.Surname
 From Swimmer, GalaRace;
 Where (GalaNo = 4) ;
 And (GalaRace.SwimmerNoOfWinner
 = Swimmer.SwimmerNo);

Select Surname
 From Swimmer
 Where SwimmerNo In; (Select SwimmerNoOfWinner
 From GalaRace;
 Where GalaNo=4);

 R. = in place of In
 I. Brackets

A. Select Swimmer.Surname,
 GalaRace.RaceNo From ..
 Or
 A. Select Surname, RaceNo
 From ..
 Brackets may be omitted.
 A. GalaRace.GalaNo = 4

 And SwimmerNoOfWinner =
 SwimmerNo is OK

3

Total 11

10. (a) (i) Web browser//Internet browser//Browser;
R. AQA Internet Explorer//Internet Explorer 1

(ii)

Source Port No	Destination Port No	Source IP Address	Destination IP Address	Source MAC Address	Destination MAC Address
1035	80				

; 1

(b)

NetworkID	HostID
140.234	1.26
140.234.1	26

(i) 140.234 (Class B) //140.234.0.0//140.234.x.y//
140.234.1//140.234.1.0//140.234.1.x; 1

(ii) 1.26 (Class B)//
26; 1

(c) (i) Computer: neptune/140.234.1.25; 1

Justification: local address is 140.234.1.25//local address is same as telnet-ed address/local address uses port 23; 1

(ii)
A. Telnet server? 140.234.1.25.23;
R. 23 1

B. Telnet client? 140.234.1.26.1055;
R. 1055 1

A. 140.234.1.25:23 and equivalent for :
A. 140.234.1.26:1055 and equivalent for :

(iii) management of remote web site;
creating a new directory/folder/file;
deleting file/directory;
renaming files/directory;
changing password;
creating a new login account;
moving/copying a file/directory from one place to another on server;
changing file/directory permissions/access rights;
retrieving e-mail;
reading a file;
searching for a file/directory;
listing directory contents;
listing contents of a file;
A. Remote access;
A. Logging in to another computer/server/node/router/firewall/switch//remote login;
A. Sending/receiving e-mail;
A. Communicating in text;
R. Transferring data
R. Checking connection
A. For hacking 1

(d)	(i)	FTP; R. TCP/IP	1
	(ii)	Leased Line; ADSL/DSL/HDSL; ISDN; T1, T2, T3; A. Broadband A. Cable R. Optical Fibre/Fibre Optic/Twisted pair	1
	(iii)	Any two @ one each NB ATM can be implied (ATM Virtual) circuit established at beginning of session (as does circuit switching); (ATM Virtual) circuit remains unchanged for duration of session (as does circuit switching)//uses dedicated channel; No routing overhead which isn't the case with packet switching; Packet switched networks can change route from packet to packet; ATM network delays predictable (as in circuit switching); Packet switched networks involve unpredictable delays; In ATM all packets sent through same switches; In packet switched networks packets do not necessarily travel through same switches; In ATM all packets arrive in order (they were sent); In packet switched networks packets can arrive out of order; In ATM packets are not stored/queued (for any length of time) at switches/switch node; R. Packet size comparison In packet switched networks queuing takes place at switches/switch nodes (packets can be stored for some time at nodes);	2
		Total	13

END OF CPT5 MARK SCHEME