

2005 Information Systems

Higher

Finalised Marking Instructions

These Marking Instructions have been prepared by Examination Teams for use by SQA Appointed Markers when marking External Course Assessments.

2. (a) Data is raw facts and figures/characters without meaning or context. eg 767HK9003, AFT653 *(1 mark)*

(Accept EDI; YYZ; 12.15; 14.15; AFT653; 767HK9003 as data)
Don't accept the field names

Information is data with meaning... given a context and/or structure eg Flight number AFT653 *(1 mark)*

1 mark per definition and example

Both definition and example must be present for mark to be awarded

2 examples that support a weak definition award 1 mark

2 definitions award 1 mark

Mark holistically out of 2

- (b) (i) Planning – Departure time 12.15. Plan to be at the airport two hours before flight departs. (Not just plan or organise to be there on time, must include at least one example or illustration of a step taken, ie get up early, book taxi, when to leave to be there on time, etc)

Luggage to be packed, passports obtained. Hopefully this would be planned to avoid last minute panic!!

Arrival Time – may have planned bus/taxi/pickup at arrival time

1 mark for example and 1 mark for justification

(date; departure time; arrival time; phrase “arrive 2 hours before departure” with no or incorrect justification - award 1 mark)

- (ii) Control – Baggage allowance-20kg. Control what you are putting into your luggage so that it does not exceed the 20kg limit. Or monitor what you are putting into your case and compare weight with 20kg limit.

Luggage weighed to check this weight not exceed/allowance made for extra baggage on return.

Departure time/departure date – Progress as to degree of preparedness for journey checked against these targets?

From the company's perspective, comparison of departure time with arrival time to analyse company's performance against set targets

1 mark for example and 1 mark for justification

Must have the notion of comparing, monitoring or making adjustments to get full marks

Baggage allowance on its own (1 mark)

- (c) (i) Paper *1 mark*
- (ii) Digital *1 mark*

- (d) Paper – permanent written confirmation. Transportable, very accessible to the recipient as no requirement for any additional equipment or special conditions. Access is not restricted.

1 mark

Digital – restricted to those who have access to the Internet (and/or appropriate passwords?) and are able to purchase a ticket on-line.

OR

- potential risk of accessibility by unauthorised persons if system security fails.

1 mark

(If opposites are given for paper and digital then only 1 mark)

3. (a)

Attribute	Type	Validity Check
Pony Name	Text	Presence or Restricted Choice
Gender	Text or Boolean	Restricted Choice for text/presence for Boolean
Hire Fee	Number/Currency	Range check

*3 marks for 6 correct
2 marks for 4/5 correct
1 mark for 2/3 correct*

(Not accepting actual range or actual restricted choice on their own)

- (b)
- To allow required operations to be performed on the data, eg number calculations
 - To apply a range check.
 - To exclude certain errors through automatic validation, eg cannot enter text into number fields.
 - Set decimal places
 - Can format as currency to save typing in the £ sign
 - Any other acceptable answer.

Any 2 bullets for 2 marks

- (c) (i) J Davidson will have to be replaced by A Walsh in the Trainer field for every rider taking the course Trekking for Beginners. This could result in missing some records, misspelling the name, etc.

(Need the idea of having to change the details of every rider which can cause mistakes)

- (ii) A new trainer cannot be added if no riders are enrolled for that course

- (iii) If S Carmichael leaves the Pony Club and the record is removed, all details regarding Trekking for Experts are also lost.

(Accept Course ID OR Course Name OR Trainer will be lost)

1 mark for each – the terms deletion, insertion and update anomalies do not need to be mentioned

- (d) Relational databases:

- comprise a number of tables whereas a flat file normally has one
- have linked tables whereas a flat file cannot have links
- allow more complex data structures to be stored than a flat file database
- more closely resemble the data model/allow attributes to be stored with their correct entities whereas a flat file has all data contained in one entity or file
- can reduce the amount of repeated/redundant data/unnecessary duplicated fields whereas a flat file can have an abundance of redundant and repeated data
- any other acceptable answer.

(Accept features that distinguish, do not need comparison)

2 marks for 2 bullets

4. (a) (i) The closing date is long term (the lifetime of the project) **(1 mark)** and it is from an external source as it is set by the competition organisers, the Daily Times **(1 mark)**.
(Accept top level managers (Daily Times) or organisers of the competition)
- (ii) The information selected from the information sources is operational as it is internal (used my Molly) and has been used on a day to day basis.
(Accept an example from information selected)

1 mark for example with reason

- (b) (i) The search query is not specific enough as “– pets” does not exclude all other cats which are animals but not pets.
or
The search query does not include any reference to music.

1 mark for explanation involving part of the query which is not specific enough with an example or 1 mark for stating that the query does not include any reference to music.

Stating that the search query is not specific enough does not get the mark as the candidates are told that the number of results is 227,000 which shows it is not specific enough.

- (ii) China +Cats –Country –Pets –Animals +Music or
‘China Cats’ – ornaments or
any acceptable answer as long as there are two changes to the given query eg additional terms for inclusion (+) or exclusion (-).
(suggestions are acceptable instead of rewriting the query)

2 marks

- (iii) Advantages

- Select from a list of options which are grouped together in categories, eg Arts & Humanities, Business & Economy, Entertainment, etc.
- Keep selecting from options available until required information is found.
- Fewer results to select from as the user selects from the various options.
- Entries are likely to be relevant as directory compiled by human “editor”.
- Don’t need to know search syntax.
- No possibility of typing or spelling errors.

Disadvantages

- User may spend time selecting various options and then discover there is no information on the topic they are looking for.
- Involves more stages to obtain results to select from.
- User has to know about topic to select categories correctly.
- Could be confusing if information is in more than one category.

1 mark for one advantage and 1 mark for one disadvantage

- (c) Molly must comply with Copyright, Designs and Patents Act (1988) (1 mark)
Would be illegal unless specifically allowed – eg from clips allowed to be downloaded from website when copyright may be waived.
Still illegal if Molly uses clip from owned CD or clip from subscription download service.
Permission from the copyright holder (1 mark)
- *Do not accept any copyright reference to web master/creator/designer*
 - *Mention Act correctly and 1 good reason or 2 poorer reasons– 2 marks*
 - *2 good reasons without the Act but relating to scenario– 2 marks*
 - *Some discussion required and related to scenario. Marks should not be awarded purely for description of CDP Act, 2 marks for two valid points.*

5. (a) Only Database, graphics, publishing and reference.

(2 marks for 4 correct, 1 mark for 2/3 correct)

- (b) (i) Functionality:- compare the features of both packages to ensure the software meets the company's requirements.

Ease of use:- compare the user interface in both packages by finding out which package allows the user to get through the tasks more efficiently. Compare the help features and degree of on-line help in both packages. Compare how intuitive the user interface is in both packages.

(Mention any one valid point. 1 mark each (max 2))

- (ii) Software has to be compatible with the processor; there must be sufficient amount of hard disk space; there must be sufficient RAM; computer must have the necessary peripherals.

3 names ***(1 mark)***

(1 mark for each description of hardware factor (max 3 marks))

Idea of comparison necessary eg sufficient RAM. Available RAM not acceptable.

- (c) (i)
- May choose not to install tutorial or all help files.
 - May not install entire range of conversion file formats.
 - May not install dictionary or range of design templates.
 - May not install all program options.
 - Choose location
 - Choose shortcut on desktop

(Any two bullets for 2 marks)

- (ii)
- Once installed, users can alter the menus by adding or removing commands.
 - Customise which toolbars to display and also where they are located on screen.
 - Customise which tools are contained in the toolbars.
 - Program the function keys to perform certain tasks.
 - Amend the colours used to display commands etc.
 - Customise the dictionary by adding technical words.
 - Customise the size of screen displayed eg visual impairment.

(Any bullet for 1 mark)

6. (a) (i)
 - Graphic file may not be a compatible format for the package being used
 - File is corrupt
 - Insufficient memory (Do not accept “not enough space”)

(Any bullet 1 mark)

- (ii)
 - Save in a more compatible format, eg jpeg (not just change file extension)
 - Re-create file or restore from back-up
 - Allocate more memory to the application by closing down application or other applications and restarting graphics package

(Any bullet 1 mark)

- (b) (i) Object Linking means that the graphic file would be saved. The package would contain a link to the **saved** file. **(Must give indication of file stored separately)**

(1 mark)

- (ii) An advantage of object linking is that:
- the word processing file size (not file space) is reduced because you are only storing the link and not the graphic file
 - any changes made to the original graphic file will automatically change the linked image in the word processed file.

A disadvantage of object linking would be:-

- remembering to include both documents (text and graphic) if passing it on
- perhaps a static link has to be set if the user does not want the image to change automatically
- the source image must always be present in the same location to display the word processed page.

(Any valid point 1 mark for advantage and 1 mark for disadvantage)

- (iii) The location/path/file name, file type of the stored graphic

(Any one for 1 mark)

- (c) Items of a menu may be greyed out if:-
- cut/copy would be greyed out if no object has been selected on the page
 - paste would be greyed out if nothing has been cut or copied
 - save would be greyed out if no changes have taken place in the document
 - print may be greyed out if no printer driver installed
 - any other acceptable answer
 - not full version of the software so some features are missing.

(1 mark for situation, 1 mark for example)

- (d) Social – Alistair may be under pressure from his friends to allow them to copy the software. He may lose this friendship if he refuses to allow them to copy his software. Software copying appears to be socially acceptable.

(1 mark)

Legal – Alistair would be breaking the Copyright Designs and Patents Act if he provided his friend with the software to install if it was still running on his own computer. Don't need to mention Act by name.

(1 mark)

7. (a) (i) Resizing the image in the web authoring package only scales the visible area for displaying the image (or displayed graphic/picture) and does not alter the size of the image stored.

(1 mark)

- (ii) The image file size could be reduced if:
- the resolution (dots per inch) in the original image were reduced. Could also mention 'save for the web' format which reduces the dpi
 - the colour depth (number of colours) were reduced or made black & white
 - it was saved using a format which uses compression eg gif, jpeg
 - make vector graphic.

(1 mark for each valid point (must be a description not merely stating a term)(max 2 marks))

- (b) • The spellchecker can only check text. Part B is text. The spellchecker cannot check any text that appears in Part A as this has been saved as a graphics file.

(Max 2 marks 1 mark for each description)

- (c) • Shareware should be run for a limited time period before you should purchase the package or delete it. The commercial package can run as long as you require under the licence.
- Shareware can be passed to other people to install under the same time constraints. The commercial package cannot be installed on other machines under the licence terms

*(2 points on commercial and 2 points on shareware = 2 marks)
(1 mark for 2 points made)*

- (d) (i) Consequences for customers:-
- can shop at any time of day
 - saves travelling time
 - customers may be disappointed if the actual product delivered is not the same as the picture on the web page
 - it may take longer to choose correct product if a sample has to be sent out to customers first.
 - credit card fraud
 - details passed on/junk mail
 - any acceptable answer.

(Any bullet 1 mark)

- (ii) Consequences for the company:-
- helps company cut down costs if less staff are needed in the stores
 - helps company increase sales as a wider target audience can be reached.
 - security issues
 - any acceptable answer.

(Any bullet, 1 mark. Answers to this part must be different from d (i))

- (iii) Consequences for society:-
- reduction in travelling to shops may reduce pollution and traffic at the weekends
 - fewer staff required in stores, therefore fewer job opportunities
 - more staff may need to be employed to deal with Internet bookings, therefore increased job opportunities
 - benefits to disabled people etc as they can shop from home
 - encourage more people to start using computers
 - any acceptable answer.

(Any bullet, 1 mark)

8. (a)
- widespread availability of experts
 - suitable for representing rules for giving advice
 - limited domain
 - customer demand

(Any two bullets for 2 marks)

- (b)
- Domain or human expert may have supplied incorrect information.
 - Programmer may have incorrectly represented the facts and rules in the KRL.
 - Knowledge engineer may have gathered or interpreted information incorrectly.
 - User may enter incorrect information into the expert system.
 - Walker & Carnan as they have overall responsibility for the investments.
 - Fund managers as they are responsible for the management of the funds that have been invested.

(Any three bullets for 3 marks, must have person plus reason)

Name three people for 1 mark

- (c) (i) A number between 0 and 1 (or 0 and 100) attached to a rule or conclusion which indicates the level of confidence in the rule or conclusion.

(1 mark)

NOT what it does BUT what it is

- (ii)
- To indicate the (expert system's) degree of confidence in the investment advice given
 - To indicate the human experts degree of certainty in the rules which are used to determine the investment advice
 - To indicate the user's degree of certainty in answers given to questions posed by the system.

(Any two bullets for 2 marks)

- (d) Ethical: no proof of truthfulness of the claim made; publishing the client's address breaches DP legislation.

Social: may result in unwanted attention (eg from neighbours, the taxman, the press); widening of the gap between info rich and info poor.

Any acceptable answer.

(One ethical implication for 1 mark and one social implication for 1 mark)

9. (a)
- | | | |
|--|----|--|
| <p>1 IF colour is red AND texture is rough THEN condition is standard. (1 mark)</p> <p>2 IF colour is yellow (AND texture is NOT glossy) THEN condition is standard. (1 mark)</p> | OR | <p>1 IF colour is yellow AND texture is glassy THEN condition is prime. (1 mark)</p> <p>2 (IF colour is yellow AND texture is NOT glassy). OR (IF colour is red AND texture is rough THEN condition is standard). (1 mark)</p> <p>3 If condition is standard AND shape is square THEN grading is second class. (1 mark)</p> <p>4 If condition is standard AND shape is round THEN grading is third class. (1 mark)</p> |
| <p>3 IF colour is yellow AND texture is glassy THEN condition is prime. (1 mark)</p> <p>4 IF condition is standard AND shape is square THEN grading is second class. (1 mark)</p> <p>5 IF condition is standard AND shape is round THEN grading is third class. (1 marks)</p> <p>(3 must follow 2 if extra condition omitted)</p> <p>(-1) if 'condition' variable not used</p> <p>'red' is OK instead of 'colour is red'</p> <p>generous with syntax</p> | | |

- (b) Knowledge acquisition: acquiring knowledge for the expert system by interviewing and observing domain experts and perhaps studying reference material.
 Knowledge representation: representing knowledge by coding as facts and rules in a KRL.
 (Name two 1 mark; Name two and one good description and one OK description 2 marks) (2 marks)
- (c) (i) second class (1 mark)
- (ii) first class (1 mark)
- (iii) undetermined
 (also accept 'don't know' or '?' but not just a blank answer) (1 mark)
- (d) The ES's results would be compared with the experts' gradings. The system would only be valid if the results matched. Idea of *put in / same answers out* (1 mark)

10. (a) 1 mark for three reasonable correct names and definitions, eg

Knowledge Base: store, facts and rules

Inference Engine: determines the order in which questions are asked, provides justifications

User Interface: communicates, displays questions, accepts answers

1 mark for description of interaction of Knowledge Base and Inference Engine eg IE accesses the KB to decide which rules to apply or questions to ask.

1 mark for description of interaction of User Interface and Inference Engine eg IE passes questions to the UI to display the questions and provide advice.

(max 3 marks)

- (b) Forward chaining (**1 mark**) responses to questions are used to direct the inferencing towards a solution, eg Q3 is generated as a result of the answer to Q2 OR gathering evidence before a conclusion **(1 mark)**
(Accept not backward as a justification)
- (c) ES: facts & rules; DBMS: tables, records, fields
ES: forward/backward chaining is applied to rules to reach a conclusion; answering a series of questions
DBMS: a query/search is carried out, producing an answer table
(Any two different points for 1 mark) **(2 marks)**
- (d) (i) to reveal the justification for asking the question **(1 mark)**
- (ii) *user*: to reassure the user that the question is relevant **(1 mark)**
developer: to ensure that the reasoning for the question being followed is accurate **(1 mark)**

11. (a) Multimedia refers to many different types of media eg audio, video, graphics, animation and text. (must give 2 examples of media types above)

Hypermedia refers to a hierarchical set of multimedia pages which are **linked** together.

(1 mark for each description, max 2 marks)

- (b) The museum exhibit could include:-
- video clips of battle scenes to help visitors visualise what happened
 - sound files, eg exploding shells or taped voices describing a particular operation
 - animation sequences showing the progress of troops throughout a battle
 - graphics of soldier uniforms etc (but not mentioning crests from part 11 (c))
 - any other acceptable answer.

It is acceptable to have 2 examples from the same media type as long as the scenarios are different, eg music sound file and commentary sound file

(1 mark each for description of three different scenarios max 3 marks)

(0 marks for just listing media types)

- (c) (i) Touch screen would be the most suited interface because:-
- no extra hardware needs to be available therefore less chance of damage/theft
 - easy to use interface requiring no extra PC knowledge eg mouse operation
 - no desk space for mouse or keyboard
 - wider range of people can access, eg special needs.

(Two bullets for 2 marks)

- (ii) Node:- eg a complete page containing all the data about each regiment
Links:- eg the connection between the crest and the next screen of information
Anchor:- eg the regiment crest

(1 mark for each of the three definitions which MUST link into the scenario)

12. (a) (i) the storage and the within components layer *(1 mark)*
(ii) storage and run time layers *(1 mark)*

- (b) Three extra features found in the Amsterdam model are:-
- can deal with links within components – while a sound clip is playing, jump to see a small video clip and then return to the sound clip again
 - can deal with temporal relationships (time based) – setting a sound clip to play 30 seconds into the video (or accept **description** of synchronisation arc as being a list of timing attributes associated with a component)
 - can apply high level presentation attributes eg adjusting the volume level or video screen size. (or accept **description** of channels as abstract output devices)

(1 mark allocated for stating each feature - max 3 marks)

- (c) (i) Atomic component *(1 mark)*
(ii) Composite component *(1 mark)*
(iii) Link component or anchor *(1 mark)*
- (d) (i) Fine grained and Course grained synchronisation *(1 mark for both named)*
(ii) Fine grained is synchronisation between two files of the same media type
Course grained is synchronisation between different media types

OR

Fine grained is synchronisation between two files playing one after the other
Course grained is synchronisation between two files playing simultaneously

(1 mark for difference)

13. (a) (i) She may have entered '14ft trampoline' as the search criteria with no space between 14 and ft – better to use just 'trampoline'
She may have entered '14 foot or 14 feet trampoline'
She could have misspelled the word 'trampoline'

(Any one for 1 mark)

- (ii) The trampoline could have been placed under more than one suitable heading in this website. She may have looked under the wrong category and not thought about looking through others.

(1 mark)

- (b)
- the relational database stores the data entered in the registration form and all data about the items in the auction in separate entities
 - the web interface provides a simple user interface which requires no knowledge of databases or query language
 - the database allows the user to only enter the item no and their user name instead of continually typing in the full details every time a bid is to be made. The bid form links the user details to the item details through a key field

(1 mark for each bullet point (max 3 marks))

1 mark for idea of separate entities,

1 mark for front end interface being user friendly with reason

1 mark for idea of entities being linked

- (c) (i) constantly refresh her screen to show up to date bid information *(1 mark)*
log out and back in again

- (ii) encryption; SSL – secure socket layer; https secure protocol *(1 mark)*
credit card details are converted into a code which cannot be deciphered. *(1 mark)*

- (d) Two social factors could be:-

- easy way to sell unwanted goods with a large target audience. Worldwide links
- increased use of computers at home/work allowing easy tracking of bids being made
- ability to purchase wide variety of new and second-hand goods at very competitive prices
- greater chance of finding the product you're looking for due to worldwide market
- enjoyment and excitement of participating in a bid for a particular item

(1 mark for any two bullets)

[END OF MARKING INSTRUCTIONS]