April 2013

EXAMINERS' REPORT

General comments on candidates' performance

There is a vast improvement in the percentage of passes for three of the Section A questions. Some reasonably good candidates wasted time by answering more questions in a section than required. Invigilators should read out the rubric and stress its importance.

Section A

A1
Indicative Answer Points

a) and b) Processes: Enter prescription details, register, request prescription, reminder, amend password etc. Data stores: Prescription, patient details, chemist detail, External entity: Chemist, patient, doctor (administrator – internal)

c) A form of prototyping would be the most useful; having identified the requirements, simple screen designs/story boards could be shown to the administrator and doctors gaining feedback in an iterative approach until satisfaction is reached. The simple system development life cycle was acceptable.

d) The screens should obtain the patients username and password; display the prescription details, mode and date of collection (surgery or chemist shop) and confirmation. Appropriate headings, use of differing techniques and navigation guidance should be included.

Examiners' comments

Having identified the main processes, external entities and data stores it was a more simple exercise to draft the data flow diagrams. A few candidates drew a context diagram rather than a high level DFD and some still drew a flowchart. Not many candidates realised that prototyping was probably the best method for this simple system; however the waterfall (SDLC) was accepted. Most marks were lost with poor screen design. This is an area that should be improved on.

A2

Indicative Answer Points

a) A feasibility report should show the feasibility of an information systems project in terms of costs, benefits and practicality. Important areas which should be included are economic, technical, operational, social, legal/ethical, environmental. The reports should contain the objectives, scope, boundaries, limitations and constraints, existing problems, alternative solutions and recommendations.

b) Typical answers would include requirements analysis, design, development, testing and implementation. Techniques – dataflow diagrams, entity relationship models (logical/physical design), normalisation, entity life histories etc. Object oriented techniques such as object, class, methods, use case, activity diagrams etc would also be accepted as well as other methods such as Yourdon, Agile, prototyping and appropriate techniques.

c) CASE – Computer Aided Software (System) Engineering tools aid the design by providing diagramming tools, dictionaries, checking/testing mechanisms, code generating tools. Examples include upper and lower case supporting various stages of the life cycle.

Examiners' comments

This was well answered question. There is still confusion over the stages of development, regardless of methodology. The existing system, its problems and requirements need to be analysed, designed, developed and implemented.

A3

Indicative Answer Points

a) Normalisation provides stable relations which can be used to design a database ensuring that all attributes depend on the primary key. It provides consistency, reduces update anomalies and avoids redundancy.

b) 1NF – removing repeating groups by removing them into another relation and using a composite key, 2NF – removing partial dependencies into separate relations, 3NF- removing transitive dependencies. Appropriate samples should be provided and the use of primary and foreign key shown.

c) 4NF, 5NF, Boyce Codd NF and Domain key are other more obscure examples.

d) A DBMS defines, stores, manipulates, maintains and controls an organisations data. It provides consistency, referential integrity, security and recovery procedures, data dictionary (meta data) etc. It can contain a variety of media as well as textual data, such as video, pictures, sound etc.

Examiners' comments

This question was not answered very well. Candidates were unable to answer parts a, b and c correctly, but credit was given by combining the answers. Examples of the normalisation techniques were poorly explained, many examples are available in recommended text books. When describing database management systems, there was little reference to other media such as video, sound, pictures rather than textual data.

A4

Indicative Answer Points

a) A software engineer is responsible for problem solving, module/program design, coding, testing and amendments. Skills such as logical thought, concentration and attention to detail. Experience of several languages for example C+, Java to SQL is required.

A network administrator is responsible for the running, support, maintenance and security of the network. This is a technical job requiring technical skills.

A database administrator is responsible for the database design and definition, control, security, maintenance, integrity, optimisation.

All have managerial responsibilities and must deal with quality, planning, technical aspects and co-ordination with users and developers. Professional or academic qualifications would normally be required.

b) Professionalism is concerned with standards, competence, ethics, skills and conduct. With regard to the BCS this encompasses technical capability, accountability and personal integrity. Employers, clients and the public are entitled to a competent and professional approach to work carried out by a BCS member.

c) Benefits: The use of multimedia as well as text provides picture, video clips and sound as well as textual detail. Trading, advertising and communication all help improve competitive advantage within the marketplace. It provides efficiency and effective use of company resource and can be used to obtain customer feedback quickly.

Disadvantages: security, hacking, confidentiality, customer confidence, speed of line, traffic issues, lack of 'touch and feel' physical aspects, possible delivery issues, loss of customer who is not on-line.

Examiners' comments

This question was answered well.

Section B

B5

Indicative Answer Points

a) Usual set of rules and regulations
Length of password > 6 characters
No reuse of password
Change every <time period>
Mix of characters and numbers
No words, DOB etc.

b) Very difficult to enforce, but essentially down to

      i)   education
      ii)   training
      iii) setting of standards and policies
      iv) third party software that monitors
      v)   checking via a brute force password checker
      vi) enforcement of a) i.e. actually forcing the password to be changed

Examiners' comments

Part a) was reasonably attempted and understood. The majority of the answers for b) were simply the answers for a) repeated.

B6

Indicative Answer Points

This was an open ended question. Marks were awarded for reasonable / good suggestions. Basically any visual part of the web site needs to have alternative means of being read / heard. A reasonable suggestion would be to create an alternative site just using audio cues.

Video - Need to have visual to audio cues
Menu system – needs to again have audio cues
Reduced images – replace images with text
Other tips – any means of having tags on images that help
Logical re-arrangement of web site, so that top left is help (usual is top right)
Making sure that one of the first options is a "Contact Us" option so that a disabled person can gain help.

Examiners' comments

This is a relatively straightforward question which has been on this exam in various forms over the last 10 years, but the low average mark reflects that candidates do still not understand that computer applications (whatever the platform) need to be inclusive and not exclusive.
Designs need to include none standard means of accessing functionality and to allow novice to expert users as well as those whose visual, mental or physical attributes do not aid them with standard access.

A number of answers commented on controlling hardware, like Braille keyboards or voice recognition systems. These are outside the realms of this type of question and should be considered to be additional to the users systems and not a mandatory part.

B7

Indicative Answer Points

a) Advantages
    Able to vary questions and get answers that are relevant
    User engagement
    Users may be happier to answer questions that use paper / phone interviews

    Disadvantages
    Time consuming, may have to conduct multiple interviews over a period of time.
    Users may not be happy being interviewed
    User may not be at the appropriate level / have the knowledge to answer the questions

b) This was an open ended question, to get the candidate to express either a positive or negative view. Where the candidate simply re-used the answer from a) they were awarded no extra marks

Examiners' comments

A well answered question showing that the majority of candidates were able to show that they clearly understood this question and knew the material. There were a number of scripts that used location as the primary reason for conducting questionnaires and did not focus on any other issues.

B8

Indicative Answer Points

a) Primary Key is used to create a unique token for a row
    Usually it is numeric, but can alphabetic etc.
    Cannot be null

b) Foreign Key is used to link tables. The value in a column is a Primary Key in another
    table
    Cannot be null
    Usually has more than one occurrence from the 1:m relationship with the Primary Key

c) A Null entry is not zero or a space
    Can be deemed to be a missing value / incomplete entry
    Is considered by some vendors as being a unique value

Examiners' comments

Parts A and B were reasonably well attempt and but part C was poorly attempted. Some of
the examples were poor or not were clearly annotated. Candidates need to do more work
on nulls and properly worked examples.

B9

Indicative Answer Points

a) When the tester does not have access to the code

   The input and outputs are tested. This means the functionality is tested and not the
   internal structures. Can be applied to a unit or acceptance tests. Does need an expert in
   the development language to test

b) The tester can see inside the box, therefore has access to the code

   Test developed to detect logic errors, syntax problems. Will not detect routines / code
   segments that are not executed. Tester needs to understand development language
   Also known as clear box

c) Primary reason is to ensure that upgrades / bug fixes have not introduce new errors

   Scripts are executed against the previous and updated system to ensure that the outputs
   are the same. It is used to ensure that a fix in one area has not caused a secondary
   problem in another area.

Examiners' comments

Black box and white box were clearly understood and shown by the majority of answers.
There was a lack of understanding of what regression testing is.

B10

Indicative Answer Points

a) Standard question asking for a comparison of

    i)   Static Pictures
    ii) Sound
    iii) Moving images

    An answer discussing radio, TV and newspapers was not appropriate.

b) The type of areas expected to be discussed are
      usability,
      performance,
      conformance to standards,
      exclusion of users etc.

Examiners' comments

Part a) was reasonably well answered, with Part B beginning poorly answered

B11

Indicative Answer Points

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This was an open ended question intending to get the candidates to think about maintenance and other issues concerned with an application once it goes live.

Areas expected in the answer included:
    i)   Training
    ii) Bug fixes
    iii) System enhancements
    iv) Performance review
    v) Annual maintenance – both HW and SW
    vi) etc.

Examiners' comments

This was a poorly answered question. A number of answers simply stated the software project lifecycle and were awarded 2 or 3 marks depending on whether the answer included testing and review. Most answers indicated that candidates thought that once software had been installed that was the end software developers involvement.

A number of answers started to discuss a formal handover but these were fairly limited.

B12

Indicative Answer Points

To manage a software project will include management of phases, people, process, project management tools, etc

Mention should be made of some of the following

1) Change management
2) Risk management
3) Version control
4) Release management

Examiners' comments

Most answers were reasonable. Some candidates answered the question with a purely project management approach without any particular reference to software. In these cases the candidate did not gain full marks. Lots of answers mentioned that project managers would undertake appraisals. This is primarily a line management role and not a software project management issue. Other answers included issues with respect to salary, promotion and bonuses. Again this is primarily a line management issue.