

BCS HIGHER EDUCATION QUALIFICATIONS
BCS level 5 Diploma in IT

April 2010

EXAMINERS' REPORT

IT Project Management

Section A

Question A1

The Tyre-It Company sells and fits tyres from a number of different manufacturers to a wide variety of motor vehicles. This is a very competitive market and it is important that the company always has a ready stock of the most popular car tyre brands. It must also be able to answer immediately any telephone enquiry for the price and number of tyres of a specific type available at that time.

In addition, good management information and the strict control of costs are essential in order for the organisation to maintain its competitive position.

It has become clear that the existing computer-based stock system, which was developed by the in-house IT section, is no longer adequate and a decision has been made by the Tyre-It senior management to adopt a new more advanced stock recording and enquiry system.

Some major tyre manufacturers offer such systems as on off-the-shelf (OTS) package, but the Tyre-It management are concerned that such packages might be too restrictive and thus not suitable for the wide range of tyres that it sells. The alternative would be to design and develop a new in-house system. However, the IT section has no experience of on-line or cost-based systems.

- a) Write a memorandum to the Tyre-It management setting out the advantages and disadvantages of acquiring an 'off-the-shelf' system as opposed to developing a new application in-house using its own staff, bearing in mind the scenario outlines above
(15 marks)
- b) A decision has been made to acquire an off-the-shelf package. Describe the activities that would now be needed to select and acquire the software and to set up a fully operational stock system.
(10 marks)

Answer Pointers

- a) 3 marks were awarded for presenting the answer in a satisfactory memorandum format, with a clear distinction between advantages and disadvantages.

The advantages of “off-the-shelf” software in this question’s context can include:

- Using an existing package means that there is no delay in deploying the new package (i.e. quicker than in-house development)
- Avoids potential problems due to the IT section’s inexperience with on-line and cost-based systems
- Avoids other risks associated with software development e.g. cost overruns
- There are likely to be fewer bugs initially, and the software will probably be better tested, than with an in-house system
- It is often possible to see it in use already at reference sites
- Cost is likely to be less as development costs are spread over many purchasers
- The supplier will be responsible for maintenance and upgrades
- Fewer internal resources are required, existing staff can concentrate in their current work
- Full user documentation (and specialist training) is usually supplied with an OTS system whereas this would have to be undertaken internally with an in-house system.

The disadvantages can include:

- A package might not be available that meets fully the organisation’s requirements (especially, for example, the need to handle a wide range of tyres)
- May be difficult to integrate standalone package with other applications belonging to the organization
- You are dependent on the supplier for enhancements; also any standard upgrades might not suit your needs
- The source code is not available, so you cannot enhance or amend the software yourself
- The supplier may go out of business
- The fact that competitors could acquire the same system means that there might be less competitive advantage in having the system
- There is a possible (though slight) danger of loss of competitive information

10 marks were awarded for a good clear discussion of at least 3 advantages and 3 disadvantages (5 each) plus a further 2 marks for their appropriateness to this specific Tyre-It context.

- b) The activities requires to select and acquire a suitable package and then install it might include:

- Drawing up requirements
- Issuing invitation to tender
- Evaluation process, including visits to reference sites
- Contract negotiation and award
- Possible acquisition of hardware platform
- Amendment of OTS software, if necessary, to meet Tyre-It requirements more fully (e.g. management information and reporting, extending the range of tyres, etc)
- Acceptance testing
- Training
- Plan and implement changes to office procedures
- Data transfer

1 to 2 marks were awarded for each valid activity depending on the quality of the descriptions provided and the scope of the activities in the Tyre-It context, up to a total of 10 marks

Examiners' Guidance Notes

Overall, part a was answered much better than part b. Many candidates tended to concentrate on the more general aspects of OTS v in-house development and did not consider at all the specific issues in this scenario. Several candidates appeared to confuse an OTS package with a bureau-based service.

- a) A good memorandum format required a heading, addressee, addresser (i.e. the writer/author), date, short introduction and conclusion as well as a clear distinction between the advantages and then the disadvantages.

Some candidates discussed separately the pros and cons of each approach, which often led to a considerable duplication of points.

Key advantages, such as the much quicker time to implementation and the likelihood of a fully tested, bug-free OTS solution were often overlooked. Similarly the important disadvantages relating to the extent to which the package might not meet Tyre-It's very specific requirements were also omitted.

- b) Several answers here listed all the standard systems development phases (many of which were not appropriate in this context), others omitted the package identification and selection phases completely (assuming that it has already been purchased?) concentrating solely on implementation.

Very few mentioned the possible need to have the OTS software modified to meet specific mandatory requirements (such modifications would usually be undertaken by the supplier) or visit reference sites (or at least contact other existing users) as part of the selection process.

Question A2

A well-known major professional institution has decided to replace its existing, in-house membership database with a package-based system. It has drawn up a short-list of 4 off-the-shelf packages, but none meet its outline requirements completely. An outline plan for the remaining tasks in this project has been drawn up as follows:

A	Compare the four packages and select one	(6 weeks)
B	Amend this selected package	(10 weeks)
C	Specify and design data for system testing	(6 weeks)
D	Design and prepare a user training course	(4 weeks)
E	and develop a data migration program	(8 weeks)
F	Carry out system testing	(3 weeks)
G	Run the user training course	(4 weeks)
H	Test the data migration program	(4 weeks)
I	Carry out user acceptance testing	(3 weeks)
J	Implement the replacement database system	(1 week)

Tasks B, C, D and E are all dependent on task A.

Task F cannot start until tasks B and C are both completed.

Task G cannot start until tasks B and D are both completed.

Task H is dependent solely on task E.

Task I cannot start until tasks F, G and H are all completed.

Task J is dependent solely on task I.

- a) Draw an Activity on Node diagram for this project, showing all dependencies and the earliest start time, latest finish time, duration and float for each task.

Highlight the critical path and calculate its duration.

(12 marks)

- b) At the end of task A it is realised that task B can be reduced from 10 to 6 weeks, but task F should be extended from 3 to 5 weeks.

Re-calculate ALL the earliest and latest start times, and floats to reflect these two changes and identify any changes to the critical path.

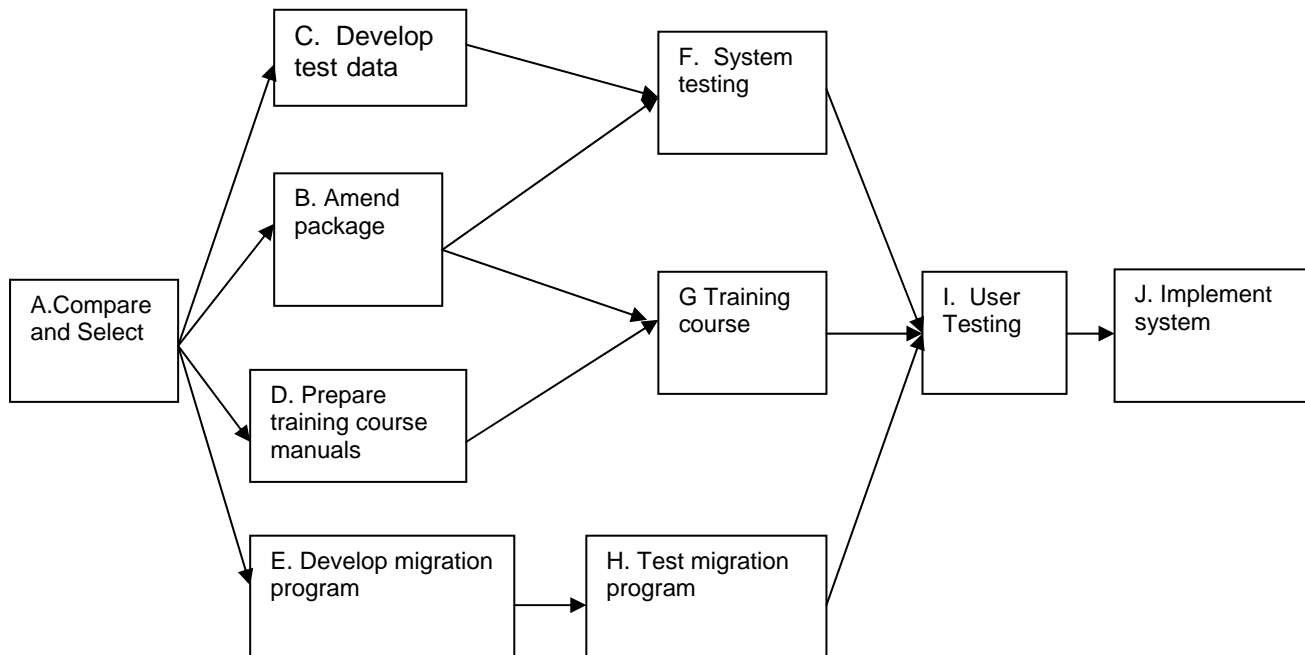
(8 marks)

- c) In some circumstances a Gantt chart might be used as an alternative to a network diagram.

- i) Give TWO advantages, with a brief explanation of each, of a using a Gantt chart when compared with a network diagram.
 - ii) Give TWO advantages, with a brief explanation of each, of a using a network diagram when compared with a Gantt chart.
- (5 marks)**

Answer Pointers

- a) The basic initial A-on-N diagram should be similar to:



Up to 5 marks were awarded for this diagram. It should contain 10 nodes (note that start and finish nodes are not essential) and all dependencies. Marks were deducted for missing arrows, dependencies, etc. No marks were awarded for an A-on-A diagram.

Up to 5 marks also for the following calculated values being correct and shown **on the diagram** (NB no specific notation method was specified):

	EST	LFT	Duration	Float
A	0	6	6	0
B	6	16	10	0
C	6	17	6	5
D	6	16	4	6
E	6	16	8	2
F	16	20	3	1
G	16	20	4	0
H	14	20	4	2
I	20	23	3	0
J	23	24	1	0

Highlight of critical path A, B, G, I, J **1 mark**
Duration 24 **weeks** (the time unit is important) **1 mark**

- b) Up to 6 marks for the following revised calculated values (though note that LFT was not requested here, but LST was):

	EST	LST	LFT	Duration	Float
A	0	0	6	6	0
B	6	7	12	6	1
C	6	7	12	6	1
D	6	10	14	4	4
E	6	6	14	8	0
F	12	13	18	5	1
G	12	14	18	4	2
H	14	14	18	4	0
I	18	18	21	3	0
J	21	21	22	1	0

There is a new critical path A, E, H, I, J **1 mark**
A revised duration 22 weeks **1 mark**

- c) Up to 3 marks for 2 advantages of each type of diagram from the following:

Gantt chart advantages:

Can be drawn to scale, showing relative durations (very rarely mentioned)

Easier for non-technical management to understand (and why)

Easier to demonstrate (quickly) the effect of delays

Easier to record/display progress to date (especially part-completed tasks)

Easier to show resource allocations and possible clashes

Easier to show working weeks and allow delays for holidays, etc

A-on-N network diagram advantages:

Easier to show the calculated EST, LST, EFT, LFT values (and float?)

Easier to show clearly task dependencies

Easier to recalculate values (eg if any task durations change)

Plus 1 or 2 marks for the quality of the brief explanations of each identified advantage.

Examiners' Guidance Notes

This question was very popular and it is pleasing to note that this time there were very few A-on-A diagrams when compared with previous years' answers to similar questions.

- a) Most errors arose here in the calculation of float. The relationship between float and the critical path activities (which by implication must have float = 0) was often not well understood. Other common issues included: not showing the values on the diagram (i.e. not using one of the standard A-on-N node layouts), omitting LFT in particular, omitting the highlighted critical path on the diagram and omitting completely the duration (and the time unit).
- b) This part was not answered very well overall. Again there were often problems when re-calculating the float, and thus the new critical path. Again the new duration was often omitted.
- c) Answers here were often quite muddled, with disadvantages (which were NOT requested in the question) being included in discussion of the advantages (leading to some duplication of points).

Sometimes the same advantages were given for both types of diagram.

Some answers seemed to imply a lack of understanding of the two diagram types. For instance the CP is not easier to see, nor are task dependencies easier to display, on a Gantt chart (when compared with an A-on-N diagram).

Question A3

Using the example of the Tyre-It Company set out in Question 1, assume that the decision has been made to use the in-house IT team to develop and install a completely new custom-built system. The system requirements have been agreed with the main user departments and an outline plan of design, build, test and implementation activities, together with resource requirements, has been produced.

- a) Explain the process by which the project manager would assign staff resources to the activities of the project.
(12 marks)
- b) Identify any amendments that may be required to the original plan as a result of this resource allocation.
(4 marks)
- c) Identify any other factors, not already discussed above, which the project manager may need to consider when creating this project team.
(9 marks)

Answer Pointers

- a) This question related very precisely to the process of assigning staff resources to the identified project activities where the resource requirements (e.g. staff skills and activity duration) for each activity have already been identified AND the outline plan has been produced.

It expected a process comprising the following steps, or similar:

- identify the resource groups (ie groups of people with the skills and experience to undertake specific types of activity, and the number of people in each group);
- allocate each resource group to their appropriate activities, in line with the initial time schedule;
- check for any resource clashes (where the number of activities to which a specific group has been assigned at any time exceeds the number of people in the group)
- resolve each resource clash, e.g.
 - using any float to delay the start of a non-critical activity
 - re-allocating staff from activities with float to one of the clashing activities
 - delaying the start of later activities (and thus extend the project duration).
 - Bring in more resources of a specific type.

6 marks were awarded for identifying the above general steps, plus 4 marks for the specific step of resolving resource clashes and a further 2 marks for the subsequent assessment of resource utilisation.

- b) Once this resource allocation has been completed then possible amendments to the original plan could include:

Delaying (re-scheduling) activities (as described above).
Increasing the estimated duration of any activities where less experienced/skilled staff have been allocated.
Splitting activities into smaller ones if different skills are needed for the original activity or to increase staff flexibility.

Up to 4 marks awarded for discussion of two or more different types of amendment and the quality of this brief discussion

- c) Other factors that the project manager might consider could include:

Staff experience and development needs
Staff skills (and development plans)
Team building (Belbin etc)
Staff availability (e.g. holidays, training courses)
Staff motivations (Maslow etc)
Other parallel projects and staffing requirements
Quality aspects
Staff backup

Up to 9 marks awarded here, usually 2 per well-described, different factor.

Examiners' Guidance Notes

This question was not answered at all well overall. Many answers were either too generalised, for instance listing all the main phases of systems development and implementation or listing/discussing the principles of project management generally, or too limited, for instance concentrating almost solely on resource smoothing.

- a) Several candidates started with drawing up a WBS, whereas this step should have already been undertaken when identifying the activities that comprise the outline plan. Very few mentioned resource groups, or the relationship/matching between such groups and the planned activities. The methodology for the matching/allocation of staff skills/ability to activity requirements was usually quite vague.

- b) This part related primarily to any consequent changes to the outline plan. Many candidates discussed the cost and other implications but did not address at all any changes to the plan itself.
- c) There were some good answers to this part, including in particular issues such as team building, motivation, quality implications and staff development.

Section B

Question B4

- a) Why do we carry out monitoring and control on a project?
(5 marks)
- b) Project managers often have to create routine reports for example weekly or monthly. Describe THREE reports that the project manager may have to write that are NOT routine and why they need to be written.
(12 marks)
- c) In order to decide if your project is on schedule what four key pieces of information must you possess and how do you obtain it?
(8 marks)

Answer Pointers

- a) The main reasons are to inform decision-making and action-taking
- b) Descriptions were required of non-routine reports which might have included:
 - Change requests
 - Issue reports
 - Milestone reports
 - Exception reports
 - End Stage

NOT a progress or a status report where a triggering event has not been described

- c) The pieces of information needed might include:
 - What is the budgeted time (baseline plan)
 - What is the present date (calendar)
 - How much work remains (looking at products/deliverables not completed)
 - What should have been achieved by this point (the plan)
 -

Examiners' Guidance Notes

The part (a) of this question was not answered well by the majority of those attempting it. Answers that demonstrated an understanding of monitoring and control as a process of creating a measure, applying the measure to identify deviations/errors/problems, taking actions or decisions and ultimately

evaluating the effectiveness of this process attracted high marks. This is fundamental reason for monitoring and control. Too many answers said that monitoring and control was important and described 'how' it could be done or 'what' areas it covered. For example, 'monitoring and control prevents errors and problems' (it is more likely to detect them) and 'monitoring and control ensures the project reaches completion' (actually good monitoring and control may lead to a decision to cancel the project).

The part b was either answered well or answered badly with little in between. Those that answered it well focused on event driven reporting and highlighted why it was not routine. Too many attempts offered routine reports such as status, progress or highlight (where an event had not triggered the report). Examples of non-routine reports include, Milestone, Exception, Change, End Stage, and Incident. This second part carried the bulk of marks for the question but some answers were far too brief and consisted of little more than headers or a title. The question asked for a description.

The final part aimed at testing the candidate's ability to distil a subject down to its essential elements. Some candidates offered up reporting mechanisms but exceptional candidates were able to identify the relationship between the four key components:

- What is the date now?
- Where should we be?
- Where are we?
- What remains?

Some candidates were able to identify a relationship between cost, time, achievement (signed-off products or milestones) and this attracted some marks but the question was very much about the schedule. The marks on the whole were low for this question but a small minority of candidates did answer it v. well suggesting it was difficult rather than impossible.

Question B5

The increased popularity of 'lightweight' project methods, for example Agile, has lead to some people questioning the need for well established structured methods. There is no method that is always best, each is more appropriate in certain circumstances.

- a) To what kind of project is an Agile approach most suited?
(3 marks)
- b) List FOUR benefits of prototyping.
(8 marks)
- c) What FOUR essential things do you need to run a JAD (Joint Application Development) workshop?
(8 marks)
- d) What is meant by the expression 'time-boxing'?
(6 marks)

Answer Pointers

- a) The characteristics of a project that might influence the use of an Agile approach might have included:

- The application is not complex
- Technical environment is stable and mature
- Application fits easily alongside other similar applications

No marks awarded for saying a software development project, it is true but too obvious.

- b) The following could have been mentioned as benefits of prototyping:

- A shorter time between design meetings
- Greater user involvement, ie more users involved.
- Quicker feedback on designs
- More frequent testing
- It is iterative and design decisions can be reversed
- Prototype can be thrown away when the design is complete
- Code can be generated immediately in some cases
- Users can be shown what is possible

- c) The following, among other requirements, could have been identified as essential for a JAD session:

- Designers or builders
- Users or clients
- A prototype or demo system or CASE tool
- A scribe - method of recording design decisions or recording tool

- d) Traditional approaches to development ask the project team to build something and then bring it back for approval. There are often delays as the product is not ready on time.

Timeboxing changes the focus and asks for whatever is ready on a certain day to be presented. This means time is fixed but functionality/quality is variable.

It requires the use of a 4GL or similar because developments are iterative and mean that there is something that can be reviewed at any time.

Examiners' Guidance Notes

There was a low pass rate for this question but in most cases the candidates scoring low marks failed to write very much. It could be that candidates were running out of steam or time (some answers seem to stop in mid-flow). Parts b and c in this overall question asked for a specific number of items i.e. 'FOUR benefits' and 'FOUR essential things', but in several cases this constraint was ignored. When this happened, only the number asked for got marked. Part d was not answered well and required candidates to appreciate

with time-boxing, if TIME is to be fixed then either COST or FUNCTION/SCOPE may have to be compromised.

Question B6

- a) Identify THREE types of 'go-live' strategy that could be used on a project.
(6 marks)
- b) Documentation is often overlooked at installation. List FOUR important documents that are will be handed over at go-live.
(4 marks)
- c) Before any system can go-live it must be acceptance tested by the users. List THREE different areas that are covered during acceptance testing.
(3 marks)
- d) Choose ONE of the three listed and describe it in more detail.
(6 marks)
- e) Describe THREE ways in which the success of a system can be measured after it has become operational.
(6 marks)

Answer Pointers

- a) 'Go Live' strategies might have included: Big Bang, Phased Functionality, Incremental site roll-out, Parallel running
- b) important documents that are will be handed over at go-live.
- Sign-off document
 - Backout plans
 - Support manuals
 - Test plans
 - Configuration Plans

Note: These are things peculiar to Go Live and while some documents such as programming standards or training materials may be handed over at this point they could be handed over well in advance of Go Live.

- c) Performance, functionality, environmental, interface and possibly data integrity testing, but not unit testing or integration testing as these are tests done by the development team in advance of the Acceptance Testing done by users or their representatives.
- d) Here three points each worth 2 marks were sought. The answers would depend on the types of testing the candidates chose to describe further.
- e) Valid measures could be:
- number of faults recorded - can be measured from day 1
 - *number* of user related errors - maybe as a result of training issues
 - at Post Implementation review - business benefits can be reviewed.
 - did system have a negative effect on the infrastructure/ other systems

- is the system running in accordance with SLA performance criteria

Note these refer to system success NOT project success, for example, meeting time, cost, quality objectives.

Examiners' Guidance Notes

Many candidates scored well on the part a which was about go-live. Candidates offered up answers about testing generally for parts c d but the focus was very much on acceptance testing which was carried out by users or their representatives and examined issues of performance, interface and function. It is assumed integration, regression and unit system testing would have been done in advance of acceptance testing. The section answered least well was the last part where many candidates offered up measures of project success rather than system success.