BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT

October 2010

EXAMINERS' REPORT

IT Project Management

Section A

Question A1

a)   List and explain very briefly the four main criteria for assessing the success of a project

(4 marks)

b)   Explain how a project manager might use information generated as part of project control reporting to identify situations that are behind schedule for each of the following reasons:

    i)   staff who are intended to be working full-time on the project are taken off sometimes to help resolve emergency situations on other projects;
    ii)   the original estimates of development times were too low
    iii)   the project scope has been extended to meet additional requests from users
    iv)   staff productivity is lower than expected.

(8 marks)

c)   Identify at least FOUR different options that are available for bringing such a project back on schedule when it has been found to be running late.

(8 marks)

d)   Explain briefly the cost implications of each of the options that you have identified in part c).

(5 marks)

Answer Pointers

a)   The four standard criteria for success are that a project should be completed:
- on time,
- within budget,
- meeting all agreed user requirements, and
- within agreed quality standards

                     2 marks awarded for listing all 4, plus 2 for brief explanations of each.
                                                              Maximum 4 marks

b)   i)   Timesheets, which record projects worked on in the time sheet period and the time recorded per project.
        ii)   Again, mainly from timesheets, where actual time recorded per activity would be greater than budget for several activities within the project. If more detailed records are kept, e.g. lines coded per program/task/activity, then these could also indicate an under estimate if the many such tasks are require more lines of code than the original estimates.
        iii)   This could be similar to (ii) but would be supplemented by inspection of the change control log, which would then include several accepted changes – many of which required additional programming effort, etc.
        iv)   This is another aspect of item (ii), but also requires lines coded per day (or some similar productivity parameter) to be recorded – for both experienced and inexperienced staff.
                            2 marks per section, with a sensible, brief explanation required for each.
                                                              Maximum 8 marks

c)	There are many possible options here, including:
- ensure that all staff are still fully scheduled (some might have completed a task early);
- recruit/bring in additional, possibly more experienced, staff resources (but this would have a cost overhead?);
- introduce (paid) overtime working for existing staff (extra cost)
- reduce project scope (with client approval);
- reduce quality checking, testing, etc (noting that some risks are involved);
- incremental implementation (if possible, again needs client approval);
- agree a new completion date (i.e. accept the delay).

However, note that this last option does not really meet the question as it does **not** "bring the project back on schedule". Nevertheless, it was accepted as a possible option **if** this proviso was stated; also it would need client approval.

2 marks per option discussed.
Maximum 8 marks

d)	Often additional costs are involved. Need to specify and explain the reason, and type, of cost clearly for each of the four options identified in part c.

1 mark per option, plus 1 for quality of the explanation/discussion.
Maximum 5 marks

Examiners' Guidance Notes

This question was very popular and attempted by most candidates.

a)	Most listed these four standard criteria. Some re-phrased them slightly, often using "scope" rather than "requirements" or "client satisfaction" rather than "quality". Some candidates took a longer-term client-based view: "value for money" or "profitable for the organisation".
b)	In general this part of the question was not answered very well. Many candidates concentrated on possible reasons why each of the named problems might have occurred, or on actions that could then be taken to remedy them, rather than how these problems could be identified in the first place.
	Each instance required a very specific identification, and explanation, of the "information generated as part of **project control reporting**" that might be used, and how it might be used. More general suggestions such as comparing with "the diagram" or "the schedule" were not acceptable.
c)	This part of the question A1 is independent of the previous part (b). Only four **different** options were required to be identified.
	On many cases candidates had, in effect, answered most of this part of the question within their incorrect answer to part (b), and some marks were awarded where this had occurred.
	Other options were frequently suggested, often relating to staff motivation, bonuses, and further training (especially if related back to low staff productivity). These needed very careful explanation to be acceptable in this context.
	If the recruitment of extra staff was suggested, then it should be noted that there would almost certainly be an additional time delay (and additional cost, to be discussed in part d) for the recruitment process itself.
d)	Answers here we usually satisfactory, but often needed to be linked more clearly and specifically to the 4 options provided in the part (c) answer

Question A2

The sales department in your company, who have their own in-house sales system, are being relocated to new offices where they will also have a new server–based sales database system. The IT section have set out an outline plan for the IT aspects of the move, with 9 main tasks (with estimated durations on weeks):

Identifier	Activity	Duration (weeks)
A	order and deliver the new database system and server	4
B	design and install the network infrastructure	7
C	order, deliver and install new PCs and printer	9
D	test the database system, server and network	3
E	test the PCs with the server and network	2
F	copy existing sales data to the new database system	1
G	copy other existing PC software to the new PCs	3
H	test all software and database on the new PCs and server	1
I	train users	2

Tasks A, B and C can be undertaken at the same time, but A and B must be completed before D can start. Tasks C and D must be completed before E can begin. E must be completed before F and G can start. F and G can be undertaken at the same time, but both must be completed before H can start. I must follow H.

a)   Draw a network diagram (Activity-on-Node) for this project, showing (on the diagram) the earliest and latest start dates, the earliest and latest finish dates, duration and float for each task.
Provide a node key explaining the layout and contents of the nodes used in your diagram.
Draw a Gantt chart for the same project tasks, showing each of these tasks, all dependencies and each task's duration.
Highlight the critical path on each diagram.
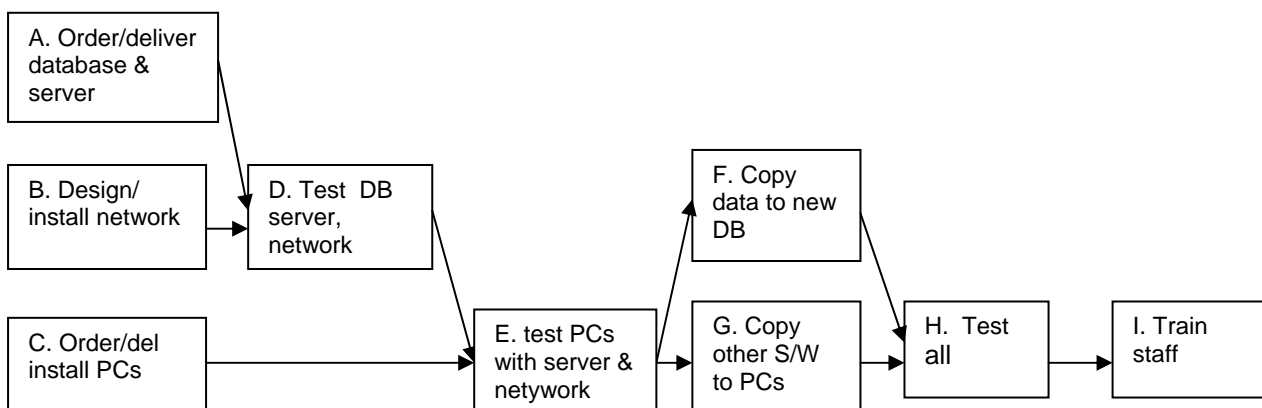What is the total duration of this critical path?

(17 marks)

b)   Discuss briefly the most significant differences between the two types of diagram, and highlighting TWO advantages of the Gantt chart and TWO advantages of the network diagram.

(8 marks)

Answer Pointers
a)
Activity-on-Node network diagram

Values (to be shown **on the diagram** using a **standard recognised format node layout   (e.g. BS 6046**)

Task	EST	LST	EFT	LFT	Dur	Float
A	0	3	4	7	4	3
B	0	0	7	7	7	0
C	0	1	9	10	9	1
D	7	7	10	10	3	0
E	10	10	12	12	2	0
F	12	14	13	15	1	2
G	12	12	15	15	3	0
H	15	15	16	16	1	0
I	16	16	18	18	2	0

Note: all figures above are in weeks

Marks awarded as follows

Correct A-on-N diagram layout, with all dependencies & values shown

(none for an A-on-A diagram)   3 marks

All correct values as above set out in each node on the diagram 3 marks

Correct, highlighted critical path (B,D.E,G,H,I)   1 marks

Node key, with explanations   2 marks

Correct duration (from Gantt or A-on-N), with time units specified 2 marks

Maximum 11 marks

Gantt chart

The Gantt chart should include:

- all tasks
- a clear scale
- a key
- a clear, correct, highlighted critical path
- correct durations, with dependencies (preferably with arrows) and float

Maximum 6 marks, with 1 deducted for each major error or omission

week	week	week	week	week		week	week	week		week		week	week	week	week	week	week	week	week	week
1	2	3	4	5		6	7	8		9		10	11	12	13	14	15	16	17	18

A

B

D

C

E

F

G

H

I

KEY

Task	Float	Critical path

Critical Path   B,D,E,G,H,I
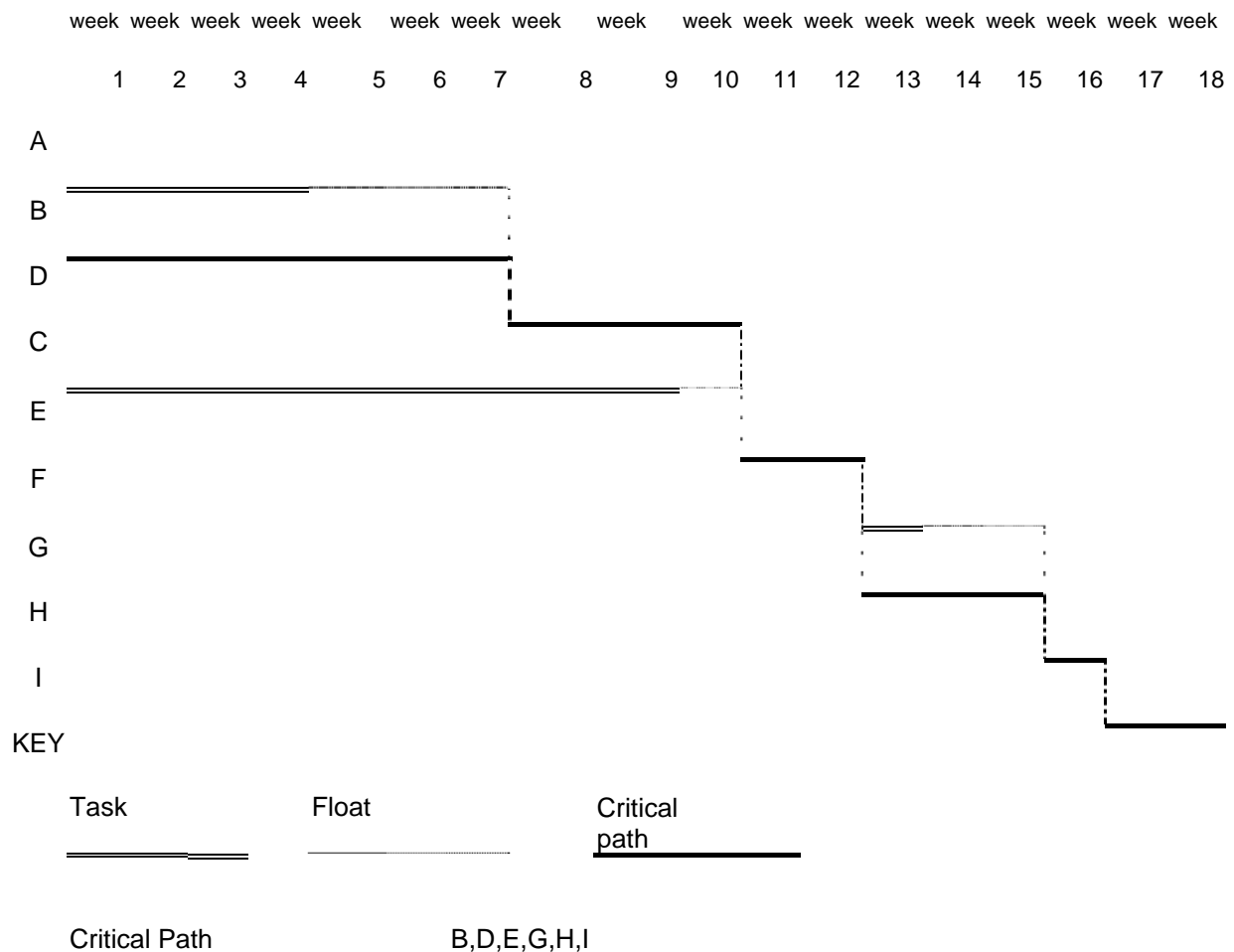
b)   The main differences could be that:

Network diagrams represent visually the full details of each task, the dependencies between tasks and thus the flow of work within the project but without any visual representation of the respective and comparative durations of each task,

whereas

Gantt charts are scaled bar charts where each bar clearly represents the exact duration of each task, and displays more clearly the timing between tasks and is especially good at displaying concurrent tasks and allocating resources to tasks.

Typical advantages of an A-on-N diagram are:

- easier to calculate AND display any amended values,
- better for displaying dependencies,
- float is more clearly defined and displayed for each task,
- the critical path is easier to highlight and see,

whereas a Gantt chart:

- is more visual, especially for non-technical staff
- shows concurrent tasks more effectively

- is a better basis for staff allocation
- shows the time scale.

2 marks for the discussion of the main differences, plus up to 6 marks for a clear identification of 2 of the A-on-N advantages and 2 of the Gantt chart advantages.
Maximum 8 marks.

Examiners' Guidance Notes

This was by far the most popular of the Section A questions.

a) Most candidates produced a clear well-designed basic A-on-N diagram here and calculated the correct duration, though there were a surprising number of errors in identifying the critical path itself. There were fewer A-on-A diagrams presented compared with recent papers.
Ideally in a network diagram (or Gantt chart) the dependencies should flow from left to right, sometimes top to bottom, with no crossing dependency lines (as shown in the outline A-on-N diagram and Gantt chart above). Arrowheads help. Several candidates did not use formatted nodes, or supply a node key, or state the time units.
When calculating the required A-on-N values, some candidates added a week between nodes, especially at the start nodes. Often one or more of LST, EFT, LFT and float were omitted from the calculated values, perhaps implying an A-on-A approach rather than A-on-N.
In contrast, the Gantt charts, often drawn after the network diagram, were frequently less complete and difficult to follow easily – especially the critical path. In several instances candidates highlighted the critical path as just the dependency lines between the tasks, but **not** including the tasks concerned.

b) Comparatively few answers here included a discussion of the main differences between the two types of diagram.

c) Many candidates provided lists of advantages and disadvantages, rather than concentrating on just two main advantages of each. In a significant number of answers the same points were included under both headings, and sometimes contradictory points were included within the same list of advantages, implying perhaps a lack of underlying understanding of the two approaches.

Marks were deducted for inaccurate assertions (such as stating that an A-on-N diagram does not show dependencies) or listing/naming the same advantages (e.g. "can display the critical path") against both diagram types (this occurred quite frequently).

Question A3

a) Explain the main reasons for using:
i)   change control and
ii)   configuration management

when developing a new in-house computer system. Highlight at least TWO advantages and ONE disadvantage of each.

(12 marks)

b) List and explain briefly FIVE major stages in the change control process.

(7 marks)

c) List and explain briefly the THREE major elements of a configuration management system.

(6 marks)

Answer Pointers

a) Ideally the reasons for using **change control** and **configuration management** should include, initially, a brief definition of each. The answer should then emphasise that **change control** is a process of linked procedures to ensure that all changes requested during a project's development are fully considered in a systematic manner, and recorded, before a decision is made whether or not to accept the requestor not

whereas **configuration management** is used to assess the feasibility of a requested change and then to coordinate the implementation of all accepted requests.

(3 marks)

change control
benefits
- ensures that the full effects of a change are considered by those in overall control of the project and its budget:
- effect on other parts of the system
- possible increase in project duration
- possible increase in project cost
                           etc
disadvantages
- bureaucracy involved
- can stifle inventiveness

(3 marks)

configuration management – the definition/explanation should make **a** clear distinction between this and change control e.g. it comprises:
- baseline of accepted configuration items
- status accounting
  - version control
  - item dependencies

(3 marks)

benefits
- easier to maintain a reliable record of development and progress
- status control
- that (under change control) the consideration of possible effects on other parts of the system is comprehensive and complete

disadvantages bureaucracy (and additional staff often required).

(3 marks)
Maximum 12 marks

b) The (usual) major stages for a change control system are:
- Submit (request)
- Review (request)
- Assess feasibility
- Decide (accept/refuse)
- Implement (dependent on "decide")
Up to 4 marks for these 5 items
Up to 3 marks for good explanation of all 5 items

Maximum 7 marks

c) The three named configuration management system elements should be:
- configuration item identifications
- configuration status accounting
- configuration control

2 marks per item, to include a good explanation of each,
Maximum 6 marks

Section B

Question B4

You have just taken over a project from another project manager. The previous project manager had begun the Risk Management process by completing the risk identification and analysis part of a risk register. You now have to complete the Risk Management process.

Id	Risk	P	I
A	There is a risk that key technical staff will leave to join a competitor.	Low	High
B	There is a risk that our offices will be flooded again	High	High
C	There is a risk that the software we are buying will contain some bugs	High	Low
D	Unless we get the project budget approved before Year End in two weeks there is a risk the project may not get funding.	Low	High

a) In the risk register what do the letters 'P' and 'I' stand for?

(2 marks)

b) Which risk should you deal with first and why?

(4 marks)

c) What are the five possible responses you could take to any risk?

(10 marks)

d) Choose three of the risks in the risk register and for each one select an appropriate response from the five possibilities above. Justify your selections

(9 marks)

Answer Pointers

a)   Probability and Impact

(2 marks)

b)   Could be either the highest risk B (H*H) or the most immediate D (two weeks)

(4 marks)

c)   Options include:
- Accept(do nothing)
- Prevent(aimed at removing probability)/
- Reduce(aimed at either reducing Probability or Impact)
- Contingency(dealing with it when it happens)
- Transfer(allowing someone else to deal with it if it happens)

(10 marks)

d)   There is no right or wrong answer, but the answers should consider the effect of the responses (shown in brackets above) on the risk. If something is high probability then a Prevent approach might be suitable but this could be expensive so Accept might be most appropriate. It is a justification rather than a right answer that is sought.

(9 marks)

Examiners Guidance Notes

On the whole this question was answered well and many candidates scored well. Over half the attempts were passes. The question was structured in a way to allow discrimination within the honours marking system.

Most candidates scored well in the first parts of the question that asked for a basic knowledge of risk terminology but struggled with the latter part which required application. Lower marks were also associated with Part d. as it extended Part c. Once the candidate had demonstrated knowledge of some of the responses to a risk they were asked to apply a response to the risks in the scenario. If they didn't demonstrate knowledge in Part C they couldn't generally apply the knowledge in Part d. The terminology found in answers to Part c. varied a lot and markers discretion was applied when the term was supported by a brief description that allowed the categorisation of the answer. For example 'Risk Mitigation' was stated as one of the possible responses. To mitigate is to 'make less severe or intense' but it could be applied to a number of responses. If 'Risk Mitigation' was described as reducing the probability, impact or both it attracted full marks. In some cases both 'Reduce' and 'Mitigate' were offered as answers but in this sense they are the same thing.

Question B5

You are approaching the end of the second stage of a four stage project. You have created a plan to show the work that needs to be done and now you must assign resources to the tasks.

a)   Describe FIVE factors that you would consider when allocating staff to a task.

(10 marks)

You know that you have all the right skills in the team but not enough people with these skills to hit the project deadline.

b)   What are some of the possible actions you could take?

(8 marks)

It has been decided that the project needs to hire a new member of staff.

c)   List the steps that you need to go through from identifying the need for a new resource right through to the end of the recruitment process.

(7 marks)

Answer Pointers

a)   Factor to be considered might have included:
*   competence
*   experience
*   availability/criticality of task
*   development opportunity
*   cost of resource

(10 marks)

b)   Options to be discussed included:
*   cross train existing members of the team/hire new staf
*   ask for delay in deadline
*   ask for reduction of scope

(8 marks)

c)   create a job description, create selection criteria and decide who will apply it, advertise the vacancy, shortlist and inform candidates, select and inform successful and unsuccessful candidates/sign contract/induct/review effectiveness of the candidate once performing.

(7 marks)

Question B6

a)   Explain the FOUR MOST important factors that are considered at the end of any stage.

(12 marks)

b)   In a project to create a new system the PM has to consider the requirements of the business as expressed by senior managers AND the users of the system. Identify and justify TWO situations where consulting the users may NOT be appropriate.

(8 marks)

c)   List FIVE ways that you could find out user requirements.

(5 marks)

Answer Pointers

a)   Is the project viable/have all products been completed/which risks have changed or emerged/is the next stage plan acceptable

(12 marks)

a)   Situations that could be mentioned include
   • When the system is aimed at reducing headcount
   • When the system is aimed at changing work practices
   • When there are issues of security or confidentiality
   • When the work will outsourced or moved to another area
   • When senior management and users are the same thing (eg MIS)

(8 marks)

c)   Interviews/workshops/JAD/examining current work practices/looking at existing systems/looking at what is used elsewhere/creating prototypes

(5 marks)

Each of the above attracted 3 marks. A single mark was awarded for budget/cost and also schedule/plan as these are still important but not the most important. There were no marks for documentation or lessons learned. A number of candidates offered a long list of answers but the question specifically asked for four. Where more than four answers were offered only the first four were marked.

Part b. was not answered well in the main as many candidates' answers were about times when users would not be consulted such as assigning programming resource or during the build phase. This question was aimed at identifying occasions when you would exclude users from requirements gathering.

Part c. was answered well by most candidates.