BCS PROFESSIONAL EXAMINATIONS
BCS level 5 Diploma in IT

IT Project Management MARCH 2018

Examiners' Report
Section A

Question A1 Syllabus References

1.1 Feasibility studies and the establishment of a business case for a project

Question A1

a) Give TWO reasons why a business case report should be produced at the outset of a new project. **(4 marks)**

b) Identify and describe at least SIX different components of a business case report.

(12 marks)

c) The business case is agreed and signed off at the project initiation stage. Give THREE situations where the business case can be used during or after the project.

(9 marks)

Answer Pointers

a) Without a business case

- The organization wastes valuable resources on projects that don't help the organization achieve its objectives. This leaves fewer resources available for more valuable projects.
- The organization has no clear basis on which to prioritize projects i.e. for establishing what is important. Without a business case and some organization-wide agreed measure of value, there is no means of determining which projects are important. Many organizations use "the loudest voice" approach, in which the managers who yell the loudest (or who have more influence, or are more intimidating) get what they want even when their projects have no relationship to the organization's objectives.
- There is likely to be disappointment after the completion of the project, if the stakeholders wonder why the project is not giving the great results they imagined. This may be because the project manager didn't know what those expectations were, or was focusing on what was being built, rather than on how it would be used.
- No rationale is established for the project's deliverables being created, other than the meeting of technical specifications. The project team may get over-engaged in technical details, losing sight of the goals of the project.

2 marks for each of two well-explained reasons.

Total 4 marks

b) Typical components of a business case report could be:

- Background
- Objectives
- Options considered
- Scope
- Benefits

- Costs
- Impacts
- Risks
- Financial case
- Conclusion

2 marks per valid well described component

Total 12 marks

c) The business case could be referred to during the project in the following situations:
   - At the end of each phase to confirm that it is still valid
   - If there is an unexpected increase in the anticipated cost of the project
   - If there is an unexpected delay in the project
   - It should also be referred to during the post-project review as part of the project evaluation

3 marks per valid explanation of each of up to three instance of referral.

Total 9 marks

Examiners' Guidance Notes

Overall this was by far the least popular question in Section A.

The business case assesses whether a proposed development is practical in terms of costs and benefits, the technical requirements and the organisation's information system objectives. It is normally prepared by the business itself leading to the justification for the project. It is NOT a system proposal from a third party, which was often assumed, nor terms of reference nor a contract.

a) Given the above misunderstandings, the evidence shows that very few candidates put forward valid reasons for a business case report.

b) Similarly, although there were some candidates who correctly listed some of the key components, there is evidence that there was tendency here to concentrate on the detailed project plan, costs, tasks, duration, and requirements.

c) Several answers stated that the business case could be used as a reference document for similar or later projects – which is the common use of the post-project review - and assumed that the business case itself would be produced after project completion. This is incorrect.

Question A2 Syllabus References

3.6 Management of relationships with the stakeholders within and outside the project team, including users.

3.1 Team building theory and practice, structures and responsibilities, including Belbin's team roles and Tuckman-Jensen stages of team evolution (forming, storming, norming, performing).

Question A2

a) Define the word "stakeholder" in relation to an IT development project.

(**3 marks)**

b) You work for a small research organisation with a number of branches throughout the country. At the moment each of these branches uses a different main database system. It has been decided by Head Office that the database system used by your branch should be expanded and then used by all of the other branches to replace their existing database systems. They would need to transfer all their data to this expanded database on a main server, which would be located in the

organisation's offices. A network would be set up linking all the branches to this main server.

List and explain at least FOUR different types of stakeholder in this new project. Identify their main concerns and their stake in the project.

(**16 marks)**

c) As a project manager in a project team and using the Tuckman model, list and explain very briefly the four main phases that the team might go through before becoming fully effective.

(6 marks)

Answer Pointers

a) A stakeholder can be defined as anyone with a valid interest in, or affected by, an IT project (2 marks) or the products delivered by it (1 mark). Total 3 marks.

b) The stakeholders in this scenario and their likely concerns and stake in this project) could include:

- all project personnel, including the project team and especially the project manager, whose reputation might be at stake if the project fails, or would be enhanced by project success;
- other staff in your office, whose responsibilities and workload are likely to increase;
- senior management at your office, who will be responsible to Head Office for the success of the project;
- the IT staff in other offices, who will need to understand the replacement system and whose jobs may be at risk;
- other staff in other offices, who will be required to learn and use the replacement system;
- all suppliers involved in the extension of the existing system, who would be keen to supply additional hardware, software, networking equipment, etc. and thus increase their sales.
- Users of the research data provided by the existing systems, who would not want any loss, delay or lack of reliability in the data to be provided by the new centralised system for their own work.
- Senior management at Head Office (who would probably be the project sponsor). Their concerns and stake would be similar, but greater, to those of the project personnel in that the future viability of the research. Organisation is very dependent on the success of this project. Any delays or shortcomings in the new central system could affect adversely both current and future research work.

Note that each of these groups have clearly different concerns and stakes (as indicated above).

Up to 4 marks were awarded for each of 4 different types of stakeholder identified, provided that likely (and sensible) concerns and stake(s) were clearly identified and discussed for each type listed. Total 4 x 3 = 16 marks

c) The 4 phases of the Tuckman model are:

Forming, storming, norming, performing – which must be in this order. Tuckman and Jensen later added 'adjourning' as a fifth stage and credit was allowed for this.

2 marks awarded for the correctly ordered list, plus 4 for the explanations. Total 6 marks.

Examiners' Guidance Notes

Overall, the concept of a stakeholder was not very well understood though most candidates answering this question were able to demonstrate a basic awareness of the Tuckman model in part (c).

a) The standard definition of stakeholder identifies three distinctly different groups of people: those "directly involved", those "indirectly involved" and/or those "affected by".). The evidence shows that very few answers made this distinction clearly. Often, candidates concentrated on only the financial aspects, considering there to be only one stakeholder (the "owner" or "financial backer" of the project) or a group of stakeholders (such as "shareholders"). This then impinged on their identification of the full range of different types of potential stakeholder in part (b).

b) There is evidence that few candidates answered this part very well. Many answers tended to concentrate on standard IT project roles rather than those described in the scenario. For instance, no development roles are mentioned in the scenario yet many answers assumed that the project would include significant systems development work. Concerns were sometimes identified well but there was then very little distinction between these concerns and stakes. There was also a tendency to concentrate on involvement and responsibilities rather than concerns (and then stake). This then showed a very limited understanding of the concept of "stake", what the individual, or group of individuals, has to gain or lose from the success or failure of the project. This stake could be reputation, money, jobs, responsibility or (perhaps) a change from interesting, exciting work to dull, boring work. Sometimes an analogy with stakes and betting helps here.

c) The evidence shows that most answers demonstrated a sound recall of the four main Tuckman model phase names and some added the fifth "adjourning". However the explanation of each phase (and sometimes their order) and the way it reflects the team dynamics were often not clear.

Question A3 Syllabus References

2.2 Use of (activity on node) precedence plans and network analysis;
2.3 Critical path analysis
2.4 Gantt charts

Question A3

A small accounting company needs to update and extend its existing time recording system. You are the project manager and have drawn up an outline project plan for the main project activities, as follows:

Activity	Duration (weeks)	Dependent on
A Draw up and agree requirements	4	none
B Select and order additional hardware	4	A
C Develop and unit test new software	12	A
D Install and test additional hardware	4	B
E Test hardware backup and security procedures	4	D
F Document new software	4	C
G Install new software and system test	6	C, D
H Go Live	2	E, F, G

a) Draw a fully analysed activity-on-node network diagram for this project, using a standard node convention, to display the duration, the earliest and latest start and end dates and the float for each activity. Supply a node key. Name, and display on the network diagram, the critical path and state the minimum duration in weeks.

(10 marks)

b) As the project proceeds, activity A was completed on time but problems occurred with both activity B and activity C. At the end of week 16 activity B is only just completed and activity C is only 75% complete (with another 3 weeks' work required, meaning that it will finish at the end of week 19). You are satisfied that all these problems are now resolved and the remaining project activities can progress at the originally planned rate.

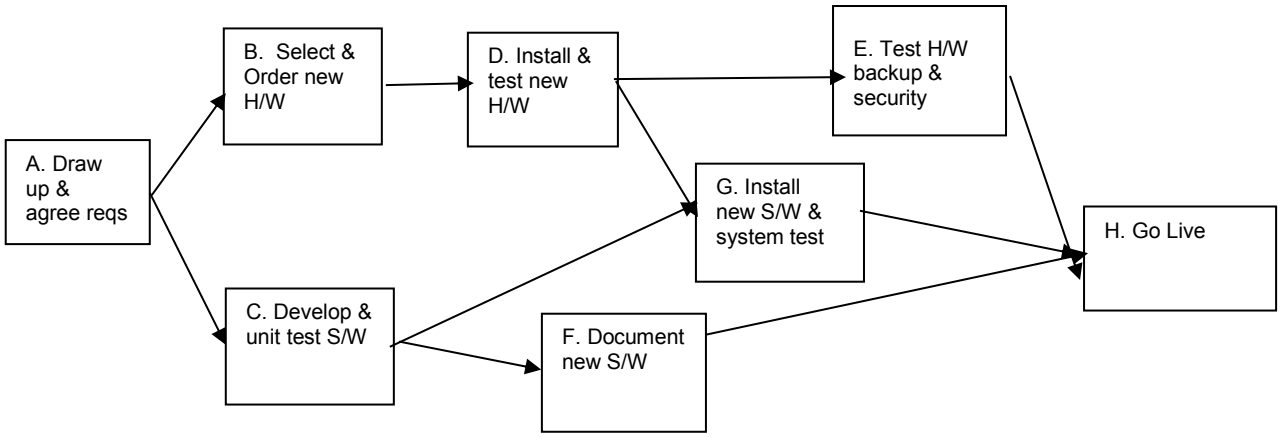
Draw a Gantt chart for the project that shows the revised schedule taking account of the actual durations of completed activities and the knock-on effects on remaining activities. Mark clearly, and name, the critical path for these remaining activities. Highlight the progress to date at the end of week 16.

What is the new end date for the project?

(15 marks)

Answer Pointers

a) This expected an A-on-N diagram similar to:



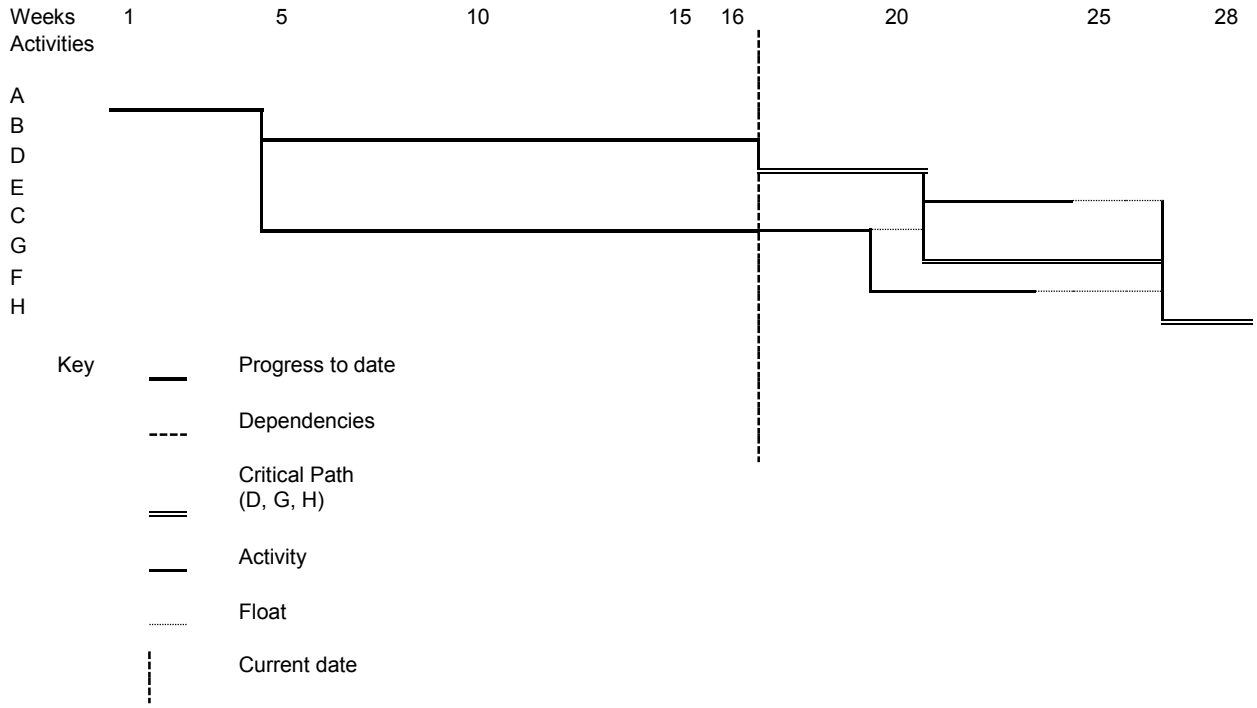
with the a recognised node layout (such as the one on pages 42 and 52 of the course text, or BS 4335) showing clearly the following calculated values:

Activity	Duration	EST	LST	EFT	LFT	Float
A	4	0	0	4	4	0
B	4	4	8	8	12	4
C	12	4	4	16	16	0
D	4	8	12	12	16	4
E	4	12	18	16	22	6
F	4	16	18	20	22	2
G	6	16	16	22	22	0
H	2	22	22	24	24	0

Up to 3 marks awarded for a valid, correct A-on-N diagram (including 1 mark for highlighting on the diagram the critical path) plus a further 4 marks for the correct calculated values (displayed on the diagram).

1 mark for a valid, sensible node key, 1 for naming the correct critical path (tasks A, C, G, H) and 1 for naming the correct minimum duration (24 weeks). Total 10 marks.

b) This expected a Gantt chart similar to:



Marks

Gantt chart:	Overall chart, with float and key	5 marks
	Progress to date marked	2 marks
	Changes to B, C and D (dependent on B)	2 marks
	Dependencies	2 marks
	Critical path named/highlighted	1 mark each
	New end date - week 28	2 marks

Progress-to-date can be shown very easily by marking the completed tasks (or part tasks) in bold (as above) or colour - irrespective of whether they are on the critical path. This, of course, should be different from the mark-up type used to highlight the tasks on the critical path. Total 15 marks.

Examiners' Guidance Notes

This was a popular question in Section A. Many candidates found difficulty in adjusting the corresponding Gantt chart in part (b) to reflect correctly the mid-project changes to the originally-planned task durations. Very few attempted to indicate progress-to-date, which is an important advantage of the use of Gantt charts and is often used in actual project progress meetings.

a) The evidence shows that most candidates produced a reasonably accurate and well laid-out A-on-N diagram. Arrowheads were often omitted but this was not penalised unless any of the main dependencies were drawn flowing from right to left or bottom to top. There were a wide variety of node layouts, very few of which were to a recognised standard. Often the float was omitted. A large number of candidates produced only an outline diagram with the node values shown in a separate table (i.e. not in the diagram). This was penalised. In several answers

the stated minimum duration was less than that of the named critical path. There were also several instances where the float of tasks on the critical path were not all of 0 duration.

b) There is evidence that the standard of drawing was not suitable to achieve high marks and many diagrams failed to show key features such as most/all dependencies and float. Some candidates used a bar chart format with no gap between the bars, which makes it very difficult to show dependencies clearly. Some seemed to confuse the concept of dependency with float. Often non-critical tasks were shown with no subsequent dependencies or float.

Most answers reflected correctly the second of the mid-project changes and showed task C finishing at the end of week 19 with all dependent tasks then starting in the next week. However many answers having correctly changed task C, did not then display correctly the completion of task B at the end of week 16, which means that task D and all its dependent tasks must then start after week 16. This changes both the critical path and the end date for the project.
Few candidates named only the critical path after week 16 as specified in the question.

Section B

Question B4 Syllabus References

4.2 Where and when to monitor; stages of the project control lifecycle.
4.5 Types of report: exception, management (e.g., highlight reports).
4.8 Assessment of implications and impact on the project of deviations and changes to project plan.

Question B4

a) Project control involves regular monitoring of activities which can be identified on the project Gantt chart. Different types of activity might be assigned higher priority in the level of monitoring that takes place. Briefly explain why the following types of activity might be prioritised:.

i) Activities that have no free float,
ii) High risk activities,
iii) Activities that consume critical resources.

(9 marks)

b) Explain who you would expect to produce a highlight report for and describe the typical items of information it might contain.

(10 marks)

c) When significant changes to a project are requested their impact can be assessed by producing an exception report. Describe the FOUR types of issues that such a report might consider.

(6 marks)

Answer Pointers

a)

(i) Those activities without free float – a delay on an activity with no free float will delay any activities that depend on it. This may not affect the overall completion date as these dependent activities may have their own float.
(ii) High risk activities – these have a higher probability of their estimated duration being exceeded.

(iii) Activities using critical resources such as consultants or experts on particular technologies might need prior booking thus constraining their availability.

For explanations of each type of activity that correctly categorises the risk 1 mark. For each point made in the explanation of that activity a further 2 marks. Total 9 marks.

b) The highlight report would be expected for the project board or project steering committee. Typically, this is a short report identifying period covered, budget and status, completions to date, problems encountered (or expected) change requests, schedule impacts of changes, and a schedule of expected completions in the next period. A highlight report is usually some form of summary from the checkpoint (or progress) reports from team leaders together with additional management comments. 2 marks for explanation of target audience and 8 marks for typical content from list above. Total 10 marks.

c) Issues could relate to change requirements, options, costs/benefits, risks, impact on plan, recommendations and implementation plan. Concerns that arise from these include possible delays to completion, impact on the overall budget constraints and objectives. A range of options might be considered to achieve a desired change to an outcome. Potential changes would incur costs which have to be accommodated within a revised budget.

6 marks for describing at least four issues identified above (or similar). Simply listing or naming content 2 marks. Total 6 marks.

Examiner's Guidance Notes.

The evidence shows that in general part (a) was well answered with most candidates being able to address (i) and (ii) well. Sub-part (iii) seemed to offer a particular difficulty for some with a number of attempts not able to properly explain the nature of a critical resource. Many candidates were able to adequately explain a highlight report although some mistook identified highlight reports as being for team developers rather than project senior management. About half of the candidates attempting this question managed a description with the remaining half naming or listing.

Question B5 Syllabus References

5.1 Risk identification: types of risk, risk checklists
5.2 Risk prioritisation: assessment of likelihood and impact of risk; qualitative and quantitative methods of assessing risk exposure.

Question B5

a) Identify any FOUR generic project risks that you might find in a software project check list and explain how each of those risks might be reduce

(16 marks)

b) Describe any THREE techniques you might use in identifying specific project risks

(9 marks)

Answer Pointers

a) Any four from the generic list of Boehm (see Hughes p 116 or Hughes & Cotterell pp 166-167) e.g.
- Personnel shortfalls – mitigated by using quality talent, training, skill matching, etc.
- Developing wrong functions – mitigated by better evaluation, using formal methods, use of prototypes etc.'.

- Changes to requirements late on in project – mitigated (reduced) by stringent change control procedures, incremental development etc.
- Unrealistic time and cost estimates – mitigated by multiple estimation techniques, design to cost, recording and analysis of past projects.

Some candidates might be familiar with in-house checklists (e.g. IBM project document checklists or similar) which will be equally acceptable if explained.

1 mark for each identity. Further 1 mark for identifying relevant mitigation. Further 1 mark each up to maximum of 2 marks for extending reduction explanation list. Total 6 marks.

b) Specific techniques might include:

- brainstorming,
- expert interviews,
- use of libraries of past similar projects specific to the domain,
- variations on the Delphi approach where senior managers from similar projects identify risks,
- identifying key stakeholders and identifying specific expertise of the domain,
- referring to documentation on hardware reliability/maintainability,
- referring to documentation and evaluations carried out on proposed bought in applications and operating behaviour.

For each of three of the above or similar techniques, 1 mark each technique identified and a further 2 marks for full description. Total 9 marks.

Examiner's Guidance Notes.

This question was attempted by a large number of candidates. The evidence shows that part a) was well answered with candidates showing a good understanding of generic project risk although extending the answer with possible mitigation strategies left many unable to provide suitable answers for high marks. Part b) was less well answered with many candidates able to name a technique but did not offer an explanation of it.

Question B6 Syllabus References

6.2 ISO 9001 and quality management systems: principles and features.
6.4 Process and product quality approaches: capability maturity models.

Question B6

a) ISO9001 is a framework used in applying a quality management system to the creation of products and provision of services by an organization. Briefly describe the principles that ISO9001 is built on.

(10 marks)

b) In your role as project manager you are tasked with evaluating potential suppliers of software packages and systems. Explain the advantages and disadvantages of relying on a supplier having ISO9001 accreditation as an indicator of quality.

(10 marks)

c) Capability maturity models (CMM) have been developed to assess an organization's sophistication and quality based on five levels of process maturity. Briefly outline the five maturity levels.

(5 marks)

Answer pointers

a) Any three from the following ISO 9001 standard.

- Customer focus: Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.
- Leadership: Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.
- Involvement of people: People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.
- Process approach: A desired result is achieved more efficiently when activities and related resources are managed as a process.
- System approach to management: Identifying, understanding and managing interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.
- Continual improvement: Continual improvement of the organization's overall performance should be a permanent objective of the organization.
- Factual approach to decision making: Effective decisions are based on the analysis of data and information.
- Mutually beneficial supplier relationships: An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

(Note that since ISO9001:2015 there are seven principles: Customer, Leadership, Engagement of people, Process approach, Improvement, Evidence-based decision making, Relationship management)

Any three from the list above with1-4 marks for each description up to a total of 10 marks

b) Advantages could be:

- It may compensate for not being able to undertake your own testing or evaluation of the supplier.
- ISO9001 gives some degree of reassurance that the product has been produced according to some quality criteria.
- ISO9001 approach gives some confidence that given correct specification following the specified process ensures the fitness of the final process output.

Disadvantages could be:

- That the quality specification might be poor.
- ISO9001 only ensures that the organisation’s process should create the product as specified.
- The product quality is not certified only the process quality.
- The standard does not directly rate capability of the organization in the building of the actual product.
- Relying on ISO9001 can bring a false sense of security that the product or service is of high quality.

These or similar points 5 marks for advantages and 5 for disadvantages. Total 10 marks.

c) CMM level definitions

i) **Initial** procedures haphazard, sometimes projects are successful but depends on individual skills of particular staff. This is the basic entry level for all organizations.

ii) **Managed** with basic PM procedures but largely remain key persons focused.

iii) **Defined** each task is defined in the software development cycle. More consistent and not individual skill process-centred.

iv) **Quantitatively managed**, processes subject to measurement. Development based on managed monitoring and controlled.

v) **Optimising process**. Process improvement based on metrics taken from the process and feedback within the control process. Procedures improved based on measurement.

1 marks for each definition similar to list above. Total 5 marks.

Examiner's Guidance Notes.

This question was attempted by only a third of candidates. It also had the lowest pass rate of this section. The evidence shows that part (a) was well answered by a few candidates, some of whom got full marks by showing a good understanding of the standard. Part (b) was less well answered with many candidates providing more than one example, often restating the same example in a different context. Part c) was adequately answered by most candidates, few failed to gain more than half of the available marks, with some candidates confusing the levels. As with the other two questions in Section B of this paper a large number of candidates were unable to gain a pass mark, giving no answers to some parts of the question or just one to two lines which in many cases were incorrect.