

## ITGS

### Overall grade boundaries

#### Higher level

<b>Grade:</b>	1	2	3	4	5	6	7
<b>Mark range:</b>	0 - 10	11 - 22	23 - 34	35 - 47	48 - 57	58 - 69	70 - 100

#### Standard level

<b>Grade:</b>	1	2	3	4	5	6	7
<b>Mark range:</b>	0 - 11	12 - 23	24 - 34	35 - 46	47 - 56	57 - 69	70 - 100

### General comments

The following comments are designed to give an overview of the more detailed comments in the report.

#### Portfolio and Portfolio Extension

- The success or failure of the Portfolio usually depends on the choice of news articles. These must have a clear issue and a link to a typical IT system
- Many candidates do not provide sufficient details about the technology within the article beyond common sense knowledge
- The candidate's own analysis and evaluation are key components of the Portfolio and must be evident for the candidate to score highly
- The link between the Portfolio and the Extension must be explicit and are best planned together as secondary research followed by primary research
- Detailed probing questions and substantial interview/s are vital in obtaining sufficient information to compare with the original research and to substantiate projections about the issue beyond the research

#### Project

- The success or failure of the Project depends upon the extent to which the candidate works with the client throughout the development and testing of the product.
- Candidates must use the "Guidance on the appropriateness and complexity of an IT solution" to create products that demonstrate sufficient complexity for an ITGS product.
- The assessment criteria guide the step-by-step process for developing the ITGS project.

**Paper 1 (common paper)**

- There has been an improvement in the technical knowledge of candidates, but many still have substantial gaps
- Candidates who have carried out practical activities do better on process related questions

**Paper 2 (SL and HL)**

- Candidates must use ITGS terminology. This refers to the technical vocabulary (IT Systems in a social context) as well as social/ethical issues relevant to the scenario (Area of impact). A good understanding of technology is often gained through hands-on experience e.g. using a database
- The best extended responses show evidence of planning and, by constantly referring back to the question, candidates do not go off course
- The best responses exhibit a detailed and balanced analysis that underpinned any judgements/opinions. Arguments are well substantiated with examples

**Paper 3 (HL)**

- This paper has a greater level of technical knowledge than the other components so candidates must have a detailed understanding of the underpinning technology
- More candidates are providing evidence of independent research, but many still need to devote more time and attention to it
- The extended responses for Q2b and Q3 must be planned reflect the depth required for higher order responses (as indicated by the command term)

## Higher level internal assessment – portfolio and extension

### Component grade boundaries

<b>Grade:</b>	1	2	3	4	5	6	7
<b>Mark range:</b>	0 - 4	5 - 9	10 - 15	16 - 21	22 - 27	28 - 33	34 - 45

### The range and suitability of the work submitted

Some candidates need to consider whether the topic they have chosen lends itself to good analysis and evaluation. Again there were news items selected that:

- Were about positive uses of IT which then required the candidates to find an issue from other sources or from their class work
- Were about narrowly focused topics with few issues such as robotic surgery
- Were about complex uses of IT and IT systems where there was little material that could easily be used in Criterion B
- Were about 'future' uses of IT where issues had to be invented
- Were about an issue but the IT used was not mentioned in enough detail for candidates to have material to easily discuss in Criterion B

The marks for the extension were often significant in candidates achieving a grade higher than would have been awarded for the portfolio alone. This is to be expected due to the maturity of the candidates when the extension is done but is becoming a trend. Hence the choice of a portfolio to extend is very important. Recommendations for the choice of a topic and an extension are made below.

### Candidate performance against each criterion

#### Criterion A

Candidates often spend too much of this criterion describing or explaining the positive impacts or some fact from the past in the first part of criterion A and only the last paragraph outlines or barely identifies the issue. Also candidates often did not refer to the IT system involved and did not adequately connect the issue to the system, or refer to the major effects in some detail and the extent of the impact.

The focus for the criteria should be setting up the importance of the issue in enough detail to prompt further detailed investigation, and the need for a solution.

#### Criterion B

Of all sections probably the one candidates struggle with most and they must understand that this is where they need to show their understanding of the IT system outlined in A. Often B was very generic and did not use correct IT terminology. There were still a few candidates using the old criteria and including areas such as history and future developments which are not needed.

A general guide to the level of IT required is an explanation which contains material about IT beyond that expected from a reasonably well informed average person. It is possible that teachers may not have the required knowledge of IT systems themselves.

Too often candidates described how to use a web site on the Internet with little reference to the technology used to build the web site and its features, and the back-end technology required to store and process the data; for example, Facebook and other social networking sites, eBay, etc.

Additionally the technology was often presented in a disorganized/unstructured manner and not related to the issue. Consequently there were not many cases where an analysis of the IT system that linked it to the issue identified in Criterion A had been undertaken.

### **Criterion C**

Candidates are also still struggling with gaining higher marks due a lack of analysis and evaluation of the different issues and examples they discuss.

The main problem is that analysis and evaluation are very often not even attempted.

It is also of concern that candidates and teachers do not seem to realize that this is the most important criterion, but unfortunately this is not reflected in the time spent on developing this part of the Portfolio. Too often the work submitted was too short.

The voice of the candidate is needed for the higher marks. The candidate needs to demonstrate higher order thinking skills – to compare and examine impacts and to then evaluate the overall impact. Most candidates clearly did not see this as the main purpose of the criterion but presented a description/explanation of individual impacts with little or no connection made between them.

### **Criterion D**

Some are still writing more than one solution and often there is a lack of evaluation of the solution for the higher marks. This is one of the easiest criteria to obtain full marks in but candidates often let themselves down with only a general description of the solution.

### **Criterion E**

Many candidates did not include the article as a source in their Bibliography and so received zero marks. All candidates should be encouraged to aim for 10 sources as this enables them to achieve well in the portfolio and specifically in Criterion C. Candidates should be encouraged to use a specific tool/ software application that enables them to format there Bibliography correctly to one of the known standards e.g. MLA.

Among the weaker candidates there was a tendency to rely on sources that were not directly related to the issue, and often were about the IT or were general sources such as Wikipedia. This demonstrated a lack of research skills.

### **Criterion F**

The candidates performed best by focusing their issue in Criterion A and then following this through all criteria achieved well. Teachers must also understand that the quality of research and sources in Criterion C is a factor in this grade. Extensive use of examples was rare, often due to the lack of sources cited in Criterion C.

**Criterion N**

This was usually a criterion that was done well but extensive analysis was relatively rare. It was pleasing to see that the recommendations made in the May 2009 report were followed by a number of candidates.

**Criterion O**

Too often candidates made general comparisons between the portfolio and the interview, and then focused on a discussion of the interview with little further reference to the portfolio. Specific quotes from both the portfolio and the interviews were not common, but more so not from the portfolio.

The generation of a new idea was very rare, but some candidates did attempt to follow the recommendations from the May 2009 report.

**Criterion P**

Very often candidates reverted to providing solutions rather than implications. The ability to write about broader implications is the highest thinking skill and the marks for this criterion were generally low.

**Criterion Q**

There were two major problems with this criterion. First the lack of sufficient detail in the header to trace the interviewee; second the lack of imagination in the creation and use of questions. Too many questions were not focused on the issue and follow up questions were rare. Not often enough different questions were designed for different types of interviewees.

The manner in which the interviews were conducted tended to lead to problems with eliciting good responses through the use of follow up probing questions. Many seemed to be not done in person, nor over the phone but by email, usually only one with no follow up.

**Criterion R**

Most candidates gained two marks for using the criteria headings and having a consistent focus on the issue under investigation.

## Recommendations for the teaching of future candidates

Teachers need to read and discuss with their candidates the recommendations made in the May 2009 report with reference to past portfolios, both good and bad. Other recommendations are included in the discussions above about the problems with each criterion, and how they were answered.

Regarding the extension - it was noticeable that there were some excellent extensions this year in which candidates achieved well. However all candidates need to remember some simple things including the use of a full header in Criterion Q, the use of an intro at the start and to make sure they fully understand the difference between the Criterion N and Criterion O so that they fulfil the criteria.

Candidates need to investigate news items that contain are listed as problematic above in section A to broaden their exposure to IT and issues but choosing a topic and news item for a portfolio is a different matter.

A good method for choosing a topic and a news item is to select a topic from those studied and find a suitable news item about the issues involved; for example, employee monitoring, computer games addiction, etc. News items that are not based on class work should be examined closely to see if they can be used.

The selection of the topic to extend was usually done well but when an inappropriate topic was chosen the quality of the extension was usually badly affected. Candidates need to work backwards from an assessment of the availability of interviewees to the choice of a topic for a portfolio piece. Quality interviewees are not common, especially for some interesting topics; hence some basic research before the choice of a portfolio topic to be researched and extended would pay benefits.

### Further comments

The majority of scripts lacked any comments by teachers throughout - which therefore did not enable them to support their candidates and the marks they had given them. The use of pencil comments, not red, should be something a teacher uses in drafts as it directs the candidates into understanding the criteria, and then if they follow this through into grading the portfolios to be sent off teachers will find that their grades will be much more accurate. Also rarely were the comments about the specific key words in the criteria, e.g. good analysis when the teacher meant good explanation.

It should also be recommended to teachers that portfolios be fully checked before being sent off to see that the correct article is attached, the area of impact is correct, the date of submission is accurate and that the candidates has provided an accurate word count on the front of the portfolio. Sometimes the date of submission and the portfolio number were inconsistent which indicates that the candidate handed in an early portfolio late.

## Standard level internal assessment - project

### Component grade boundaries

<b>Grade:</b>	1	2	3	4	5	6	7
<b>Mark range:</b>	0 - 4	5 - 8	9 - 12	13 - 17	18 - 21	22 - 26	27 - 35

### The range and suitability of the work submitted

The projects ranged from worthwhile conscientious efforts developed over a span of several months to inappropriate or simplistic projects that were not of the standard required for ITGS candidates.

Successful projects were characterized by:

- The candidate worked closely with their client throughout the process from Criterion G through Criterion K. Projects where the client is affiliated with the school (i.e. teacher, administrator, parent or a person responsible for a candidate activity) tended to have a greater potential for success. These clients understand the importance of the ITGS project.

- The candidate understood the requirements of the ITGS project criteria. Several schools were still using the old Criterion H and Criterion J printed in the Guide.
- The candidate ensured that their product met ITGS standards by following the “Guidance on the appropriateness and complexity for an IT solution” (download from the OCC).
- The teacher carefully supervised all stages of developing the product and initialled the candidate’s entries in their logbook.
- All of the components (product, logbook and report) were submitted as required (see past Subject Reports). Products must be submitted electronically on CD-ROM/DVD. The URL must be provided where applicable. Desktop published products must be submitted as a final published (printed) document and electronically as well. Wherever possible, products must be save in different formats to ensure that the moderator can view and test the product. Completed questionnaires must be included in the appendix of the report.

There were many commendable products in both design and content. Notable submissions included desktop published books and extensive websites. Some products could not be considered as ITGS products (i.e. simple flyers, websites with only few web pages containing some text and images, products only created with templates without any elements of complex content).

Some schools received notices on their feedback forms relating to failing to meet the requirements for submission of products and/or the lack of complexity of products.

## Candidate performance against each criterion

ITGS teachers are encouraged to read the ITGS Subject Report from May 2009 and also the ITGS Project Checklist (download from the OCC). The information below supplements those documents.

### **Criterion G: Identifying the problem within a social context**

Most candidates identified a client by name and position and described problem that requires an IT solution. In many cases the candidate included a summary of the interview that they held with the client in the appendix of the report and referred to statements made by the client about the inadequacies of the current situation. Claims about the inadequacies of the current situation requires evidence from the client or other end-users.

The candidates should work closely with their client from criterion G through criterion K. The client must not be the ITGS teacher.

### **Criterion H: Analysis and feasibility study**

The two solutions must be clearly IT solutions. ‘Producing a video’ or ‘making a book’ is not sufficient to identify the product and an IT solution. In these situations it must be clear that software will be used in the development of the product.

There are four parts to this criterion: description of each approach, comparison, justification and how the chosen IT solution solves the problem identified in criterion G. Very few candidates address all four parts.

**Criterion I: Planning the chosen IT solution**

Many candidates followed the five stages of development of the project by dividing this section into five sub-sections.

**Schedule**

There should be a detailed timeline identifying when the various stages will happen. This should include who does what, and when it should be done. Very few candidates achieve two marks.

**Design**

The report must contain scanned images of the diagrams and sketches from the overall plan and design of the product. All diagrams, sketches and screenshots must be legible and described within the report. They must be included within the report under criterion I and not in the Appendix of the report.

**Software**

Screenshots should also be used to explain how the various IT applications were actually used in the **making** of the product. Candidates need to explain what complex techniques they used in making their product (see “Guidance on the appropriateness and complexity of an IT solution”).

**Hardware**

The use of the hardware was not described well. Candidates must include the details of scanners, video cameras, digital cameras, printers, and other peripherals used for the making of the product. Candidates often neglect describing backup, servers, web-hosting services and the configuration of the client’s computer if it is relevant.

**Data Collection**

Citing and describing the sources of all the resources used to make the product is still a major shortcoming. This includes any copyrighted material, code, images, templates, photographs, videos, URLs or other sources for content.

**Criterion J: Testing and evaluating the solution**

A knowledgeable person should test the project for content and technical aspects. The client must be the third tester. All three test-refine processes should be carried out in a well-structured manner using an appropriate questionnaire. The testers' expertise level, the number of that test should be indicated.

The candidate should identify and justify the refinements made, including ‘before’ and ‘after’ screenshots to provide evidence of changes that were made. The screenshots must be legible must be marked with circles or arrows to clearly show the where the described changes were made.

Completed questionnaires must be included in the appendix of the report. Wherever possible these should be specific to the type of testing that the person is completing. They should be signed and dated. The ITGS teacher cannot be a tester.



The comments on the questionnaires must coincide to the changes made to the product. Some candidates made claims that did not appear in the questionnaires. These tests were not considered.

### **Criterion K: Assessing the social significance of the product**

The client is a valuable contributor to both the observed and projected impacts. The observed impact must emerge from the implementation or use of the product. Most candidates experience difficulty in describing one projected impact (in future tense) and describing one observed impact (in past tense) of their product because they have not gone back and interviewed their client.

### **Criterion L: The Product**

Candidates must achieve the level of complexity required for the ITGS product. Candidates will acquire new IT skills as they develop their product. Rarely do candidates have all of the necessary skills at the onset of beginning the Project.

Candidates must check the CD-ROM/DVD that they will submit on a computer different from where they created the product to ensure functionality. Candidates should also save their projects in at least two different formats. For example and desktop published document maybe saved in an Adobe InDesign format as well as in pdf format. Annotated screenshots (8-10) from the final product are required in the appendix of the report.

Some schools did not meet the requirements for submitting products on a CD-ROM/DVD and these had to be requested during the moderation process. Desktop Published products must also be submitted in final printed form. The URL for products that are websites must also be provided wherever necessary.

### **Criterion M: The Log Book**

ITGS teachers need to regularly monitor progress and initial pages in the logbook. All five stages of development need to be documented and accompanied by diagrams, sketches and screenshots. Evaluation of the process and product can occur throughout the logbook.

### **Appendix of the Report**

The appendix of the report must contain:

- directions in order to access and use the product
- completed questionnaires from the three phases of testing
- 8-10 annotated screenshots from the final product

## **Recommendations for the teaching of future candidates**

- Read the ITGS Guide and the new *Project assessment criteria* with the new criterion H and criterion J that replaced the criteria H and J in the current ITGS guide.
- Review the Project section of the May 2009 and Nov 2009 ITGS Subject Reports.
- Review the Project feedback sent to the school's IB Coordinator for the M10 ITGS sample projects.

- Provide candidates with three documents: new *Project assessment criteria*, the *Project checklist* and *Guidance on the appropriateness and complexity of an IT solution* (download from the OCC).
- Show candidates exemplary projects (products, logbooks, reports) that reflect good practice.
- Teachers should provide information for candidates to share with clients about the requirements of the ITGS Project.
- The teacher should manage candidate progress from criteria G through K to ensure that they follow the process described in the assessment criteria and consult regularly with their client.
- The teacher can provide the candidate with feedback on how well they have met the criteria on one draft of the project report.
- The teacher can annotate in pencil in the right margin of the project report or provide a separate sheet explaining how they awarded marks on the final project.
- Post questions concerning the ITGS project in the Discussion Forum on the OCC.
- Attend ITGS face-to-face workshops or online workshops to discuss the ITGS project and view sample products, logbooks and reports.

## Higher and standard level paper one

### Component grade boundaries

#### Higher and standard level

<b>Grade:</b>	1	2	3	4	5	6	7
<b>Mark range:</b>	0 - 5	6 - 10	11 - 14	15 - 18	19 - 22	23 - 26	27 - 40

### The areas of the programme and examination that appeared difficult for the candidates

Technical definitions continue to pose a problem. Also many candidates failed to read the questions carefully and wrote answers to questions that they thought were there rather than the questions that were actually there.

### The levels of knowledge, understanding and skill demonstrated

Generally, knowledge was at a superficial level although the results were up on last year. Technical understanding was often limited and guesswork was too often in evidence.

## The strengths and weaknesses of the candidates in the treatment of individual questions

### Question 1

- a) Often well done. Candidates either 'got it' or they didn't. The question simply required the candidates to read off from the featured of the computer but some clearly did not understand which components were communication ports.
- b) Reasons were often vague. Many speculated that the laptop alluded to in the question has a higher specification than the sub-notebook although there is nothing to suggest that.
- c) Most got some credit. It seems that the nature of Open Source was being widely taught. Modification is often mentioned even though most users probably won't have the time or the ability to do that. The better candidates have clearly had some experience using open source software.

### Question 2

- a) Most of the better candidates knew about pixels. Few added much else.
- b) Many talked about preconditions such as having a user name, rather than what is done to authenticate the login credentials.
- c) Most got the point about not having someone to ask if training were online. Many were vague about reasons. Many talked about computer based training rather than specifically online training.

### Question 3

- a) Few understood the term "information system". It is mentioned in the syllabus and ought to underpin the understanding of the entire syllabus. Many just tried to describe the example given.
- b) Few were able to suggest the essential steps in providing updated data in this scenario. The better ones mentioned GPS, real-time updates and the calculation of expected arrival times.
- c) Many talked about how the system helps passengers rather than how it can be used by the bus operators to improve services.

### Question 4

- a) Few candidates seemed to know what a function is. They don't seem to have been exposed to the term in its specialised sense even though they have probably all used at least one spreadsheet function.
- b) An easy 4 marks for anyone who has actually made a graph on a spreadsheet and the majority scored well. A few clearly had never carried out what should be a common procedure.
- c) Quite a few did not seem to have any experience of making or using macros. However many got the idea that they save time on repetitive tasks. Only the better ones brought up issues of errors in them introduced by inexperienced users and the attendant difficulties of maintenance.

## Recommendations and guidance for the teaching of future candidates

The major issues are as follows:

- Candidates should be taught to read the question with a critical and analytical eye. They must avoid the tendency to rush straight in with a standard all purpose response. Regurgitating buzz words does not get credit. It alerts examiners to the likelihood that the candidate is guessing, not thinking.
- The technical knowledge really must be at a level expected of a candidate who has followed a two year course that focuses on IT systems. The better candidates show that they understand information systems as well as their impact on people.
- Candidates must have as much hands on experience of common processes and software as possible. They must be taught to work with software with a critical understanding of exactly what they are doing and not just as automatons. If they are using a function, they ought to know that is what they are doing. Terminology must be absorbed, understood and used appropriately.

## Higher level paper two

### Component grade boundaries

#### Higher level

<b>Grade:</b>	1	2	3	4	5	6	7
<b>Mark range:</b>	0 - 6	7 - 13	14 - 20	21 - 27	28 - 33	34 - 40	41 - 60

### General comments

Higher Level Paper Two examines all Areas of impact. In this session Question 1 (Business and employment) and Question 4 (Health) were common to both the Higher Level and Standard Level papers. Question 2 and Question 3 examined the remaining four Areas of impact. HL Question 3 and SL Question 5 also shared the same questions for part a) and part b).

Question 1 on ATM technology, was popular and set on a topic that is familiar and discussed in most ITGS classrooms. Candidates were able to attempt all parts of the question.

Question 2 on the use of the Internet in political campaigning, was popular and it appeared that candidates who chose this question were familiar with the technology.

Question 3 was popular. The scenario was not familiar to most candidates, but they had studied the topic of simulations.

Question 4 on databases of genetic data, was probably the most challenging and the least attempted question. The first three parts addressed basic database concepts and these had obviously not been studied and were not well understood.

## The areas of the programme and examination that appeared difficult for the candidates

### Answers off course

In Question 1d) some candidates wrote about online shopping and others discussed advantages for banks such as the need to hire fewer employees. In Q3d) many candidates wrote about cost saving.

### Recommendation

- Encourage candidates to continually refer back to the question and highlight key words
- Incorporate role plays into lesson plans. After studying simulations, one candidate (the farmer) is using a greenhouse simulation and asks another ITGS candidate whether he should rely on the results. The second candidate, recalling class discussions, would immediately question issues such as reliability of the software. He would not say 'this will be beneficial because it will save you money'. Yet this was one of the answers given by the majority of candidates.

### In appropriate exam technique

Many candidates answered all the questions. This adversely affected marks as responses were rather superficial due to lack of time.

### Recommendation

- Advise candidates on exam requirements
- Run trial exams, under strict exam conditions and using past exam papers

### Lack of technical knowledge

Most candidates could not describe the process to create a database query in 4b) indicating that they are not using database software in class. Most technical knowledge was common sense rather than the result of undertaking the course.

### Recommendation

- Give candidates hands-on experience with applications
- Balance text book theory with a practical approach

### Inability to use or define key terms in the Guide

It was disappointing once again to often see terminology misused or not understood. 'Integrity' was a term frequently misused in Q3d) in reference to simulations. In Question 4 few candidates could define 'key field' and most did not know the difference between data matching and data mining. Identifying the protocol and domain name in Q2a) should have been easy, but some candidates were not familiar with these terms.

**Recommendation**

- Insist candidates maintain a glossary of IT terminology
- Ensure candidates understand the terminology relating to social and ethical issues
- Provide practical activities, e.g. querying a database, so candidates have first-hand experience of the technologies

**Illegible handwriting**

Handwriting was sometimes illegible. It makes the examiner's job difficult and poor handwriting can disadvantage the candidate when key words cannot be deciphered. Over the two years of the course the teacher may learn to read unusual handwriting but an examiner does not have the time to investigate different methods of exploring how to read seemingly indecipherable handwriting.

**Recommendation**

- Insist the candidates take the time to write as clearly as possible
- Make candidates handwrite class tests
- Advise candidates to use new paragraphs for separate points, to leave line spaces between part questions and to start a new question on a new page

**Extended responses not thoroughly developed**

All extended responses were marked according to the markband on the following page. Lack of balanced answers, failure to provide opinions and weak, unsubstantiated arguments prevented candidates attaining the higher marks. In most cases responses were linked to the stimulus material and it was common to see attempted analysis. Sustained analysis was less obvious and it was rarer to find candidates gaining 9-10 marks. By the end of part d) the question had often not been answered. For example in 1d) there should have been an opinion on the extent that improved customer service outweighs possible disadvantages. Often candidates merely described advantages and disadvantages.

**Recommendation**

- Explain to candidates how the markband is used to mark extended responses.
- Show candidates how to plan and structure an extended response.
- Share examples of good responses with candidates.
- Allow candidates to practise extended writing using past exam questions.
- Use the markband when assessing extended responses in class tests.
- When candidates research issues suggest they document examples from their research as these could be valuable for substantiating arguments in exams.
- Run class role-plays where candidates take the parts of various stakeholders.
- Insist candidate re-read the question several times and check again at the end after completing the answer to make sure there is a conclusion/opinion that provides an answer.

**Markband for all extended response questions**

<i>Opinion discuss, evaluate, justify, recommend and to what extent</i>	<i>0</i>	No knowledge or understanding of IT issues and concepts or use of ITGS terminology.
	<i>1–2 marks</i>	A brief and generalized response with very little knowledge and understanding of IT issues and concepts with very little use of ITGS terminology.
	<i>3–5 marks</i>	<p>A response that may include opinions, conclusions and/or judgments that are no more than unsubstantiated statements.</p> <p>The response will largely take the form of a description with a limited use of ITGS terminology and some knowledge and/or understanding of IT issues and/or concepts.</p> <p>If no reference is made to the information in the stimulus material, award up to <b>[3 marks]</b>.</p> <p>At the top end of this band the description is sustained.</p> <p>At the lower end of the band a tendency towards fragmentary, common sense points with very little use of ITGS terminology.</p>
	<i>6–8 marks</i>	<p>A response that demonstrates opinions, conclusions and/or judgments that have limited support.</p> <p>The response is a competent analysis that uses ITGS terminology appropriately. If there is no reference to ITGS terminology the candidate cannot access this markband.</p> <p>There is evidence that the response is linked to the information in the stimulus material.</p> <p>At the top end of the band the response is balanced, the response is explicitly linked to the information in the stimulus material and there may be an attempt to evaluate it in the form of largely unsubstantiated comments. There is also evidence of clear and coherent connections between the IT issues.</p> <p>At the lower end of the band the response may lack depth, be unbalanced or tend to be descriptive. There may be also implicit links to the information in the stimulus.</p>
	<i>9–10 marks</i>	<p>A detailed and balanced (at least one argument in favour and one against) response that demonstrates opinions, conclusions and/or judgments that are well supported and a clear understanding of the way IT facts and ideas are related.</p> <p>Thorough knowledge and understanding of IT issues and concepts.</p> <p>Appropriate use of ITGS terminology and application to specific situations throughout the response. <b>If there is no reference to ITGS terminology candidates cannot access this markband.</b></p> <p>The response is explicitly linked to the information in the stimulus material.</p> <p>At the lower end of the band opinions, conclusions and/or judgment may be tentative.</p>

## The levels of knowledge, understanding and skills demonstrated

In the extended responses there was greater evidence of opinions than in past examination sessions. Although often unsubstantiated, this indicated that candidates had given some critical thought to the issues and impacts. Those candidates who scored high marks for the extended responses provided balanced answers with well analysed arguments clearly substantiated with appropriate examples. It was obvious from some of the answers that candidates had more than a textbook knowledge of the concepts and their teachers had provided hands-on experience with database searches in class.

## The strengths and weaknesses of the candidates in the treatment of individual questions

### Question One

- a) Many candidates identified speakers, monitor or printer. Some answers were too vague e.g. 'Where the cash comes out'. Other answers indicated that the term 'output device' was unfamiliar.
- b) This question was generally well answered. Candidates suggested 'card skimmers' and cameras to capture the PIN. One interesting solution was installing malware on the ATM to record the data on the card's magnetic stripe and record the PIN. Some candidates did not read the question carefully and discussed online fraud using credit cards
- c) Most candidates realised that a PIN or password had to be entered. Often there was not sufficient description of the validation process, rather they described the need for a PIN. They needed to explain that the PIN/password is sent to the bank's central computer to verify it is valid for that account number.
- d) Good candidates were able to analyse the benefits of improved customer service plus the disadvantages to customers and weigh up their findings. Their opinions were backed up with relevant examples. For example one disadvantage included susceptibility to potential scams such as fake Web sites posing as their banks. This was analysed in the context of possible solutions such as customer education giving examples of particular banks and their customer education programs. Some candidates veered off course and began discussing online shopping.

### Question Two

- a) This was a straightforward question. Either http or hypertext transfer protocol was accepted for the protocol and either www.barackobama.com or barackobama.com was accepted for the domain name. Many candidates had not learnt these terms.
- b) Key phrases in this question were 'sent to you' and 'regular basis'. There were many excellent suggestions, some involving Web 2.0 technologies, such as "*voters can join the party's social networking site by becoming a "friend" and they will receive updates in their [social network] inbox*" Other answers were along the lines of "*visiting the party website and subscribing to their newsletter which is sent by email.*" Candidates who did not read the question suggested a party could send e-mails with no indication of how this could be sent on a regular basis.



- c) Most candidates were able to score half marks, but fewer fully answered the question by giving reasons for the pdf format over the word processing format. This seemed to be caused by failure to fully read the question rather than a lack of knowledge on the topic
- d) Candidates had few problems with this question. Most addressed the issues from the perspective of candidates, but others also considered the voters. Both viewpoints were accepted.

### Question Three

- a) Many candidates could identify one input and one output on the diagram
- b) Various tasks were described, common ones being the testing of data, gathering a database of data and designing the user interface. Candidates who did not read the question missed the word 'development' and wrote about the 'use' of simulation software.
- c) Candidates who had studied the benefits of simulations handled this question well. Those who did not read the question carefully either wrote about benefits to farmers or wrote about generic benefits that could equally apply to a text book
- d) This question was disappointing as many candidates appeared to only glance at the question and then they wrote a 'recipe' type answer which described all the advantages, then all the limitations and gave a summary at the end.

### Question Four

- a) Although this was just a definition of an IT term many candidates were not able to gain marks.
- b) Candidates who had used databases in class were able to write a query or describe a query in sentence format. Many were not aware of the process.
- c) There was poor understanding of the terms data matching and data mining.
- d) Although the question stem gave good guidance, few candidates addressed the advantages to medical research. Concerns to citizens were mentioned and answers were often generic

## Recommendations and guidance for the teaching of future candidates

- Teachers should frequently visit the OCC to access official ITGS documents, share resources and join the very active ITGS discussion forum.
- Teachers need to check the IBO events calendar on the OCC for details of ITGS workshops in their region or online.
- Candidates need to follow the recommendations contained in this Subject Report.

## Standard level paper two

### Component grade boundaries

#### Standard level

<b>Grade:</b>	1	2	3	4	5	6	7
<b>Mark range:</b>	0 - 6	7 - 13	14 - 20	21 - 27	28 - 33	34 - 40	41 - 60

### General Comments

Standard Level Paper Two examines all Areas of impact. In this session Question 1 (Business and Employment) and Question 4 (Health) were common to both the Higher Level and Standard Level papers. HL Question 3 and SL Question 5 (Science and environment) also shared part a) and part b) in common.

Part A Required question for all candidates.

Question 1 (Business and employment), on ATM technology, was familiar and discussed in most ITGS classrooms. Candidates were able to attempt all parts of the question.

Part B Candidates selected two questions.

Question 2 (Education), on the use of Virtual Learning Environment, was a popular question.

Question 3 (Arts, entertainment and leisure) focused on digital TV and related services. Question 3 was problematic for some candidates because they did not read the scenario or parts of questions carefully enough.

Question 4 (Health), on databases of genetic data, was probably the most challenging and the least attempted question. The first three parts addressed basic database concepts and these seemed not to be well understood.

Question 5 (Science and the environment) was frequently selected. The actual scenario was not familiar to most candidates, but they had studied the topic of simulations.

Question 6 (Politics and government) addressed the legislation by governments to prevent intellectual property theft. Candidates were familiar with the scenario.

### The areas of the programme and examination that appeared difficult for the candidates

The same problems cited under HL Paper 2 also were evident in SL Paper 2:

- Answers off-course
- Inappropriate exam technique
- Lack of technical knowledge
- Inability to use or define key terms in the Guide
- Illegible handwriting
- Extended responses not thoroughly developed

The recommendations for HL candidates also apply to SL candidates.

## The levels of knowledge, understanding and skill demonstrated

There was insufficient factual knowledge of IT terminology and concepts in parts a) and b) of questions. More emphasis needs to be placed on studying IT systems as a basis for understanding social and ethical impacts.

'Explain' questions require reasons to be provided. Most candidates were not able to achieve full marks on these questions because of the lack of detail required for the command term 'explain'. In general, the expectations of the command terms for part c) and part d) were not well understood.

In the extended responses there was evidence of opinions. However, these were often unsubstantiated. Some candidates gave critical thought to the issues and impacts. Those candidates who scored higher marks for the extended responses provided balanced answers with well analysed arguments clearly substantiated with appropriate examples. It was obvious from some of the answers that candidates had more than a textbook knowledge of the concepts.

## The strengths and weaknesses of the candidates in the treatment of individual questions

### Part A Required question for all candidates

Refer to Question One (Business and employment) under HL Paper 2.

### Part B Candidates selected two questions

#### Question Two (Education)

- a) Most candidates correctly identified two types of software that must be available in order to make use of a VLE.
- b) Although most candidates seem to actually know two ways in which teachers may solve candidates' problems and provide feedback using this web site, the descriptions were lacking sufficient detail how this would be done.
- c) Candidates did not 'explain' with reasons how the VLE would actually allow each candidate access only to the specific subject that they are requesting. Most candidates only had a general idea of how access would be controlled. It was apparent from the responses, where candidates actually had hands-on experience in accessing online courseware.
- d) The question expected candidates to evaluate the implications of the introduction of VLE for the school and for the candidates. A complete response would have provided positive and negative implications for the school and for candidates and then reach a conclusion. In most cases the candidates did not provide a balanced response as a basis for their evaluation. A balance between IT technical terminology and the terminology related to social and ethical impacts was required in the response.

**Question Three (Arts, entertainment and leisure)**

- a) Most candidates were able to achieve 1 mark for defining the term *resolution*, but rarely provided a complete response for 2 marks.
- b) Many candidates did not read the question carefully and often described features of digital TV rather than interactive services.
- c) This question required an explanation of how a domestic installation such a digital TV can communicate with the digital provider. Many candidates described the reverse process.
- d) The responses from candidates argued successfully both sides of the issue *to what extent is the growth of video clips on the Internet overtaking the need for digital TV?* Most candidates provided sufficient IT terminology and terminology for social and ethical impacts in their response. They also demonstrated more balance in this question than many of the other extended response questions.

**Refer to Question Four (Health) under HL Paper 2.****Question Five (Science and the environment)**

- a) See Question Five part a) under HL Paper 2.
- b) See Question Five part b) under HL Paper 2.
- c) Most candidates did not read “to design products *such as greenhouses*” and only explained advantages of using simulations to design greenhouses. This limited the scope of the response considerably.
- d) Again candidates failed to consider the usefulness of simulations in the broader perspective of teaching and learning of a science subject. Consequently, they missed the opportunity to use cite examples from the full range of science simulations that they have experienced. Many candidates limited themselves to the greenhouse simulation. Very few candidates reached the upper range of marks in the markband.

**Question Six (Politics and government)**

- a) It was surprising how many candidates could not define *intellectual property* even though it is a fundamental concept in ITGS.
- b) Most candidates were able to describe from their own experiences two services an ISP provides to Internet users. These usually included access to Internet services, email accounts and web page hosting.
- c) Again candidates were very aware of the ways a home computer network could be adversely affected by the use of file sharing services. Most explained the effects of downloading huge files or the effects of downloading viruses.
- d) Most candidates did not place the emphasis on discussing governments regulating the use of P2P sites for file sharing and what implications this would have for the music industry. Some candidates did not consider a range of stakeholders (i.e. music companies, musicians, users) involved in the scenario and the positive and negative implications for each of them.

## Recommendations and guidance for the teaching of future candidates

The recommendations and guidance for teaching of future candidates for SL Paper 2 are the same as those for HL Paper 2.

## Higher level paper three

### Component grade boundaries

<b>Grade:</b>	1	2	3	4	5	6	7
<b>Mark range:</b>	0 - 3	4 - 7	8 - 11	12 - 15	16 - 18	19 - 22	23 - 30

### The areas of the programme and examination that appeared difficult for the candidates

Describing the step by step process of seen the CT scan.

Technical knowledge does not go beyond common sense points and suggested that there had been little or no additional research into these concepts

There was confusion in some issues. What an expert system is and some misconception on what is an EMR.

Lack of planning of the extended response required for Q3 led to many candidates providing a response with no obvious structure and repetition of concepts.

Lack of citing of examples of independent research to support the response in Q3, thus preventing possible access to the highest markband.

### The levels of knowledge, understanding and skill demonstrated

Progression beyond simple and superficial description in questions 2 and 3 was difficult for many candidates. In general the candidates were not able to provide evidence of analysis or evaluation

The IT terminology that was put in an answer was not depth required or expected by candidates who had studied the Case Study for up to one year

### The strengths and weaknesses of the candidates in the treatment of individual questions

#### Question 1

Many gave all the steps required except the last one of viewing /copying the image to the local computer. A significant number of candidates failed to answer the question given the steps of taking/capturing a CT scan instead others chose the e-mail option.

**Question 2**

- a) Some candidates simply restarted the information from the stimulus material (Village A has this and Village C has this) but with little explanation of what that may mean for medical care. A very big majority of these candidates concentrated on Village A only. Many candidates understand that as the cell phone was recently installed Village C would not be able to use this technology effectively. Also most responses were contrasting the two villages and the technologies available. Few candidates make comparisons. There was also a lack of technical details in the responses
- b) Most candidates gave lack of integrity/accuracy as a disadvantage of using search engines. The majority failed to properly explain what an expert system is. Only a few mentioned knowledge bases and inference engines. In general the candidates seem to know what an expert system is but were not able to go beyond this point.

**Question 3**

Even though there seems to be an improvement in the number of cases that mention independent research a great majority still do not show any evidence of such research. A great quantity failed to mention supplier considerations; others did not make any reference to the stimulus material on their responses.

Some candidates answered this question as a generic “what are the advantages of EMR?” question and scored very lowly as a result.

Very few candidates planned their responses first leading to repetition and a lack of clarity of argument. Better candidates had appropriately quoted examples of their independent research to back up assertions made in their evaluation.

## Recommendations and guidance for the teaching of future candidates

- Many candidates need to be taught how to interpret the command term when reading the question and link this to the depth of response required. If the command term is higher order, the candidate must also spend time developing a structure for the extended response.
- Teachers need to develop candidates’ analytical skills. The analysis of the information underpins any conclusions drawn.
- Teachers must instruct/advise candidates to link their responses with the stimulus material and avoid generalized evaluations in Q3 as well as giving candidates the opportunity to learn how to integrate research into Q3 style questions.
- Guest speakers, independent research and field trip should continue to be encouraged as it does give candidates a deeper insight into the Case Study establishing a relationship with a real life scenario.
- IT terminology should be expected in all practice answers to avoid responses having phrases such as “expert systems are made by experts so it is more reliable than online search engines”
- Understand the requirement of the different command terms
- Understand how marks are allocated for extended responses and how the markband is applied.