M12/3/ITGSX/SP1/ENG/TZ0/XX/M

International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

# MARKSCHEME

## May 2012

## INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

## Standard Level

## Paper 1

21 pages

Examiners should be aware that in some cases, candidates may take a different approach, which if appropriate should be rewarded. If in doubt, check with your Team Leader.

In the case of an "identify" question read all answers and mark positively up to the maximum marks. Disregard incorrect answers. In all other cases where a question asks for a certain number of facts *e.g.* "describe two kinds", mark the **first two** correct answers. This could include two descriptions, one description and one identification, or two identifications.

It should be recognized that, given time constraints, answers for part (c) questions are likely to include a much narrower range of issues and concepts than identified in the markband. There is no "correct" answer. Examiners must be prepared to award full marks to answers which synthesize and evaluate even if they do not examine all the stimulus material.

**1. Implementation of a school database**

**(a) (i) State the name of the primary key field of the table *tblVisit*.** ***[1 mark]***

- Visit_Number.

*Award **[1 mark]** for the correct key field stated.*

**(ii) State the relationship between the tables *tblNurse* and *tblVisit*.** ***[1 mark]***

- The Nurse_ID field in *tblNurse* and Nurse_ID field in *tblVisit*.

*Accept Nurse_ID.*
*Award **[1 mark]** for the correct relationship stated.*

**(iii) State a field type that would be suitable for *Surname* in the table *tblStudent*.** ***[1 mark]***

*Answers may include*:
- string
- varchar
- text.

*Do not accept number.*
*Award **[1 mark]** for a field type stated up to a maximum of **[1 mark]**.*

**(iv) State a field type that would be suitable for *Salary* in the table *tblNurse*.** ***[1 mark]***

*Answers may include*:
- numeric / numeral / number
- floating point
- currency.

*Award **[1 mark]** for a field type stated up to a maximum of **[1 mark]**.*

**(v) State a field type that would be suitable for *Sent_Home?* in the table *tblVisit*.** ***[1 mark]***

*Answers may include*:
- logical
- Boolean
- yes/no.

*Award **[1 mark]** for a field type stated up to a maximum of **[1 mark]**.*

**(vi) State a field type that would be suitable for *Telephone_Number* in the table *tblNurse*.** ***[1 mark]***

*Answers may include*:
- string
- character
- text
- varchar.

*Award **[1 mark]** for a field type stated up to a maximum of **[1 mark]**.*

**(b) (i) The database will allow teachers to export data to a spreadsheet.**

**Explain *one* reason why teachers would export data from the database to a spreadsheet.** ***[2 marks]***

*Answers may include*:
- *Reason:* exported data in spreadsheet format may be shared with other users
  *Explanation:* some users cannot work with a database but do work with a spreadsheet or do not have the database software
- *Reason:* exported data can be shared without having to share all data in the database *i.e.* data to be shared is selected
  *Explanation:* exported file size smaller / avoid sharing unnecessary data
- *Reason:* exported data may need calculations
  *Explanation:* these special functions and formulae are present in spreadsheet software and not in database software.

*Do not accept answers that refer to "user friendly" or "easier to use".*
*Award **[1 mark]** for one reason identified and **[1 mark]** for an appropriate explanation of that reason up to a maximum of **[2 marks]**.*

**(ii) The new database will also require teachers to undertake training to be able to use it.**

**A local company is offering to train users in the use of the new system. The two options proposed are:**
- **online training**
- **face-to-face training.**

**Contrast the two options.** ***[4 marks]***

*Answers may include*:
**Examples of situations:**
- time and place of the training
- IT requirements
- personal considerations
- cost considerations.

**Contrasts may include:**

| Online training | Face to face training |
|---|---|
| *Time and place of training:*<br>• online training can be scheduled for longer periods of time and 24/7<br>• training may be available to teachers regardless of where they are. | *Time and place of training:*<br>• training is scheduled in one place for a fixed period of time<br>• teachers may have difficulties in participating in the f2f training due to other commitments. |
| *IT requirements:*<br>• users need hardware, software and an Internet connection. | *IT requirements:*<br>• rooms need to be set up with the hardware and software resources for the training session. Internet access may not be necessary. |
| *Personal considerations:*<br>• the participant may be distracted or feel isolated<br>• the participant may have more time for reflection and posting questions<br>• online simulation may crash and teachers may not have the resources or knowledge to solve the technical problem<br>• lessons can be customized for the participant, *i.e.* move at the pace needed<br>• stressful, impossible for a non-IT person. | *Personal considerations:*<br>• trainees may feel more comfortable to ask questions to an actual trainer<br>• trainees may see what others are doing and receive help / advice or step-by-step guidance<br>• the individual needs of the trainee can be more easily met<br>• trainees may learn from each other as well as from the tutor<br>• the presence of a tutor may provide a friendly atmosphere / be less threatening. |
| *Costs involved:*<br>• no need for travel (tutors or learners)<br>• need for personal equipment and software. | *Costs involved:*<br>• logistical and cost issues of trainees travelling to the training need to be addressed. |

***[1–2 marks]***
*The candidate identifies one or more situations that have differences in online and face-to-face training but they have been described in isolation.*

***[3–4 marks]***
*The candidate explicitly describes one or more situations that have differences in online and face-to-face training in relation to each other. Appropriate terminology is used throughout.*

**(c) The following screen shows the options this database will have in its online version.**

**When the system was purchased it was possible to include a Virtual Private Network (VPN), giving remote access to teachers to this database, which is stored on the school's server.**

**Discuss the impact for the school of the decision to allow teachers remote access to the school server.** ***[8 marks]***

*Answers may include*:

**Positive impacts for the school – "school includes teachers, administrators and students"**

- school may bring deadlines forward because teachers will be able to work after school from home
- school will provide a better service for students if teachers can access students' records from home to do follow-ups, upload homework, update the calendar *etc.*

**Negative impacts for the school – "school includes teachers, administrators and students"**

- some teachers may have difficulty meeting deadlines because their connection from home may not be as good as needed to work with the software
- teacher dissatisfaction – there may be more expectation on teachers to work in the evenings on school-related tasks
- teachers may request extra compensation because they are expected to work from home
- teachers may not feel comfortable with the use of IT and may need training
- school will now have the responsibility to have the system running after school hours and provide some support / provision for failure; IT support available after school, robust servers, hacker protection
- school will have to provide teachers with the hardware such as laptops and, additional software to use the VPN from outside of school
- some teachers may not log out of the network when away from school which may present security issues.

***In part (c) of this question it is expected there will be a balance in the ITGS terminology between IT technical terminology and the terminology related to social and ethical impacts.***

***Please see generic markband information sheet on page 21.***

## 2. Home network

**(a) (i) Identify *four* advantages of using a home local area network (LAN) rather than several stand alone computers.** ***[4 marks]***

*Answers may include*:

- hardware resources may be shared (*e.g.* printers, hard disks)
- internet connection may be cheaper for a LAN than for a number of standalone computers
- computers can connect to the resources wirelessly and avoid having cables around the house
- software resources may be shared (*e.g.* antivirus)
- files may be shared between computers without the need of external memory devices to transfer them from one computer to the other
- internet security is easier to take care of if only one internet connection is available to be shared between home users
- backups can be made using different computers as copying files between them is simple.

*Award **[1 mark]** for each advantage identified up to a maximum of **[4 marks]**.*

**(ii) *James and James IT* will only deal with the installation of equipment in the house for the local area network (LAN). The family will have to contact the Internet Service Provider (ISP) they wish to use.**

**Describe the role of the ISP.** ***[2 marks]***

*Answers may include*:

- ISP provides internet access to the LAN
- ISP has access to an internet backbone to provide its user with internet access
- ISP provides bandwidth to users for internet access.

*Award **[1 mark]** for the role identified and award **[1 mark]** for the description of the role. Award a maximum of **[2 marks]** for the answer.*

**(b) James and James IT have given the family a choice of a wireless network, a wired network, or a mixture of both.**

**The Perez family have chosen to have a combination of wireless and wired networks.**
**See the diagram below.**

**Explain the decision of the Perez family to install a mixed network.** ***[6 marks]***

*Answers may include*:
**Reasons to have a wired component**
- family may already have a standalone computer with no possibility of wireless access
- family may want a computer with wired access to the LAN to guarantee faster connection to transfer large files
- some peripherals are more reliable when wired.

**Reasons to have a wireless component**
- new computers can be added without the need to add cabling
- allows mobility around the house
- visitors may use their laptops/palm/ipods when visiting.

**Reasons to have a mixed network**
- users may choose to use wired or wireless computers depending on the type of work they need to do (*e.g.* for extensive backups the use of a wired connection may allow faster transfer)
- they may have one central area for the wired computer and main peripherals (*e.g.* printers) and allow other users to choose where to work in the house.

*The response must explain the need for both wireless components/network and wired components/network. If only one type of component/wired have been addressed, the maximum that can be awarded is* ***[3 marks]****.*

***[1–2 marks]***
*A limited response that demonstrates minimal knowledge and understanding of the topic and uses little or no appropriate ITGS terminology.*

***[3–4 marks]***
*A partial explanation that demonstrates some knowledge and understanding of the topic. Some relevant examples are used within the response. There is some use of appropriate ITGS terminology in the response.*

***[5–6 marks]***
*A detailed explanation of the issue which demonstrates thorough knowledge and understanding of the topic. Relevant examples and appropriate ITGS terminology are used throughout the response.*

**(c) The Perez family were concerned about having a peer-to-peer (P2P) network at home and decided to ask *James and James IT* to convert their peer-to-peer network to a client-server network.**

**Evaluate this decision.** ***[8 marks]***

*Answers may include*:

**Advantages of P2P at home**

- no dedicated server – all computers are work stations
- less expensive as most operating systems have the software required by default
- easy to install and maintain
- good file, printer and CD-ROM sharing.

**Disadvantages of P2P at home**

- slow – computer resources may be shared by the computer user and by other users requesting access to the workstation
- no good for database applications
- not as secure as client-server as security is handled by individual work stations
- less reliable (server is workstation)
- limited expandability
- software needs to be installed in each computer.

**Advantages of client-server network at home**

- tends to have faster access speed
- expandable – new peripherals or more computers can be connected to the LAN
- will work with any application
- handles shared database applications
- more reliable (dedicated server)
- highest level of security as security is handled by the server
- upgrading software/files is easier as this only needs to be done on one computer and is shared by all.

**Disadvantages of client-server network at home**

- needs dedicated server
- more expensive to buy
- more expensive to maintain
- needs someone to take care of the installation and maintenance and to assign levels of access (if this is a family member, there could be disagreements)
- might require a special area in the house with security to keep the file server
- if the server fails then data will not be available for users and may cause family problems with members not being able to do their work.

[Source: http://www.abanet.org/genpractice/magazine/1997/spring-tpg/tsp97jure1.html]

***In part (c) of this question it is expected there will be a balance in the ITGS terminology between IT technical terminology and the terminology related to social and ethical impacts.***

***Please see generic markband information sheet on page 21.***

**3. Telemedicine**

**(a) (i) Define the term *real-time communication*.** ***[2 marks]***

*Answers may include*:
- communication in which information is received at (or nearly at) the time it is sent
- is synonymous with "live communication"
- uses a direct path between the source and the destination
- data goes from source to destination without being stored anywhere
- often used for communication between people in different locations.

*Award **[1 mark]** for any of the points stated above up to a maximum of **[2 marks]**.*

**(ii) After an accident an image of an x-ray of a badly broken leg was taken in bitmap format. To ensure the resolution was clear/high enough for a doctor to see the extent of the injuries, the image size was 12 MB (Megabyte). The connection the doctor will be using has a speed of 240 kb/s (kilobit per second).**

**Calculate how long it will take to download an image of each x-ray. *(Show your working.)*** ***[2 marks]***

**The following calculation must be shown:**
- Conversion to kilobit:
  12 MB is $12 \times 1024$ KB $= 12\,288$ KB (Kilobyte),
  $12\,288 \times 8 = 98\,304$ kb (kilobit)
- Calculation of transfer time:
  98 304 / 240 = 409.6 seconds (6.83 min / 6 min 49.6 seconds).

***Or***

**Considering the conversion by 1000 instead of 1024:**
- 12 MB = 12 000 000 bytes = 96 000 000 bits (approx)
- download speed = 240 kb/s = 240 000 bits per second
- length of time for download = 96 000 000 / 240 000 = 9600 / 24
  = 400 seconds (approx)
  = 6.67 min/6 min 40 seconds (approx).

*Award **[1 mark]** for the conversion to the same units (e.g. 12 MB to kb, or kb/s to MB/s).*
*Award an additional **[1 mark]** for the calculation of the transfer time*
*Accept correct calculations if units are not stated.*

**(iii) In some cases the technology available in the remote locations will not allow for large images to be sent to the hospital.**

**Identify *two* methods to resolve this problem.** ***[2 marks]***

*Answers may include*:

- compress the image (and save into a different picture format *e.g.* JPG)
- take a picture again in a different format that has a lower resolution (sacrifice resolution for transfer time)
- break down the file into smaller files using appropriate software and send individual files separately
- resize the image
- convert the image to a different format (that requires less space *e.g.* jpeg files smaller than png files).

*Do not accept uploading the image to a service such as Flickr so that the hospital can download them.*
*Award* ***[1 mark]*** *for each of the points stated above up to a maximum of* ***[2 marks]****.*

**(b) (i)** **Explain *one* situation in telemedicine that is better suited to *real-time* data transfer and *one* situation in telemedicine that is better suited to *store and forward* data transfer.** ***[4 marks]***

*Answers may include*:
**Situation in telemedicine better suited to *real-time data* transfer:**
- doctors guiding an operation in a remote location (robotic operation) – he will need to have the information such as blood pressure or oxygen levels in blood in real-time during the operation
- an ambulance at an accident – paramedics may need real-time data such as heart rate of the patient(s).

*Award **[1 mark]** for situations similar to those stated above. Award an additional **[1 mark]** for a reason why specific data needs to be transferred in real time.*

***N.B. In this situation "store and forward" is used to refer to "delayed data transfer" where it is saved on a device or server until it can be sent.***

**Situation in telemedicine better suited to *store and forward* data transfer:**
- doctors in remote locations may not have a permanent internet connection – X-ray files, or similar, will be stored at the server and transferred when the internet connection is available
- situations that might not need immediate response or do not need to have all the participants available simultaneously – data can be digitized, sent and transferred only when recipient accepts it for clinical consultation rather than for a hospital visit.

*Award **[1 mark]** for situations similar to those stated above. Award an additional **[1 mark]** for a reason why the specific data needs store and forward data transfer.*
*Award a maximum of **[4 marks]** for this question.*

**(ii)** **Many mobile devices use *store and forward* to manage data transfer.**

**Explain *one* reason for using *store and forward* by such devices.** ***[2 marks]***

*Answers may include*:
- messages will be stored until the recipient is available to receive the message – the recipient's cell phone may be turned off or without service and the message will be kept in the server until the mobile phone appears as available. Otherwise the message would be lost
- exchange server stores messages and prioritizes their delivery
- mobile devices use different networks so routing messages through an exchange server allows it to be sent to the destination.

*Award **[1 mark]** for the point stated up to a maximum of **[2 marks]**.*

**(c) In many countries doctors are using videoconferencing to treat patients remotely. Evaluate this medical practice.** ***[8 marks]***

*Answers may include*:

**Advantages**

- patients do not have to travel
- doctors do not have to travel
- patients in remote locations have access to experts from around the world
- doctors/nurses/health care workers in remote locations benefit from assisting/listening to an expert who will be doing the treatment
- video conferences can be recorded for later review
- more patients may be treated by the same doctor as there is no need for the doctor to have to travel between patients.

**Disadvantages**

- equipment for videoconferencing is needed
- time may be a problem if doctors are in a different time zone
- doctors do not get to "see" and touch the patient, must trust doctor in remote location
- connection may fail and ruin the communication
- results from tests and exams will have to be sent (*e.g.* emailed/transferred) in advance
- some patients may not be familiar with video conferencing, and be less willing to describe their symptoms to the doctor.

*Do not accept costs involved in video conferencing systems.*

***In part (c) of this question it is expected there will be a balance in the ITGS terminology between the IT technical terminology and the terminology related to social and ethical impacts.***

***Please see generic markband information sheet on page 21.***

## 4. Traffic control

**(a) (i) Define the term *SMS alerts*.** ***[2 marks]***

*Answers may include*:
- SMS – Short Message Service
- short messages sent automatically
- user specifies when he/she wants to receive messages (*e.g.* receive an alert when your favourite team scores a goal)
- sent messages are received by an SMS message centre and sent to the destination.

*Award **[1 mark]** for each of the points stated up to a maximum of **[2 marks]**.*

**(ii) Identify *two* ways information about traffic can be captured electronically at a certain location.** ***[2 marks]***

*Answers may include*:
- using a digital camera
- sensors on the road
- GPS devices in cars periodically send specific information about a car's location and speed.

*Award **[1 mark]** for each way identified up to a maximum of **[2 marks]**.*

**(iii) Outline *two* ways how this information may be transferred to a central location.** ***[2 marks]***

*Answers may include*:
- digital camera may be connected to a wired or wireless network and images are transferred to the server
- information from sensors is stored in the devices and sent via the network at set intervals.

*Award **[1 mark]** for identifying one way in which this information may be transferred to a central location up to a maximum of **[2 marks]**.*

*Award an additional **[1 mark]** for a description of each way in which this information may be transferred to a central location up to a maximum of **[2 marks]**.*

**(b) The data collected can be used to develop models of traffic flow at various times of the day and in various situations such as during periods of heavy snow. Information from these models is used to manage traffic flows on major roads and will determine what decisions need to be made in controlling traffic on a day-to-day basis.**

**Analyse the decision to use these models to manage traffic flow.** ***[6 marks]***

*Answers may include*:

- information from sensors may be mapped and speed signs on the road may vary their speed allowance according to the traffic flow
- traffic lights may be programmed to receive this information and adjust the times between the change of lights
- information systems provide data that can be mapped to improve traffic management (*e.g.* graphs, maps, diagrams)
- information can be used to predict peak hour traffic or traffic on certain dates which allows planning ahead and road usage
- city growth (*e.g.* building of roads or implementation of transport systems) can be done using information provided by these models – provides information for the justification of potential future developments such as bypasses, roundabouts, traffic lights, pedestrian crossings
- model may be dynamic and allow for real-time adjustment to facilitate traffic flow
- may provide additional benefits such as law enforcement linked to registration plates of vehicles
- model may require a significant amount of data to be accurate
- the range of scenarios may be limited, or events that need traffic management occur so infrequently that the traffic management system may not provide any additional value
- traffic management system will still require human input in many cases to instigate changes
- the management of traffic may involve buying expensive equipment to install in many locations – cost and planning involved
- the installation of the system may involve training of specialists to program and maintain the system and equipment – cost and time involved
- a power failure/failure in the sending of information may cause a huge traffic problem
- large volume of cars on the roads can only be managed by an automated system and if it fails it may take hours to get the traffic back to normal
- accidents may be identified faster and help sent to the location immediately
- citizens may be more reluctant to break traffic laws as these actions may be easily detected and fines applied.

***[1–2 marks]***
*A limited response that demonstrates minimal knowledge and understanding of the topic and uses little or no appropriate ITGS terminology.*

***[3–4 marks]***
*A partial analysis, either lacking detail or balance, that demonstrates some knowledge and understanding of the topic. Some relevant examples are used within the response. There is some use of appropriate ITGS terminology in the response.*

***[5–6 marks]***
*A balanced and detailed analysis of the issue which demonstrates thorough knowledge and understanding of the topic. Relevant examples are used throughout the response. There is appropriate ITGS terminology throughout the response.*

**(c) Discuss the impact of having the information from traffic control systems available to the police.** ***[8 marks]***

*Answers may include*:

**Advantages**

- motorists will have to follow traffic rules as breaking rules may result in an automatic fine – transgressions are easily spotted
- control by the police department will make traffic violations decrease and make driving safer
- accidents will be reported immediately and action can be taken to save lives and solve traffic jams.

**Disadvantages**

- information may be used for other purposes *e.g.* tracking people
- police department database may not be secure and could be accessed by hackers
- police officers may think it is better to be in the office receiving the information than patrolling the streets – it might be difficult to find a police officer on the street if required.

***In part (c) of this question it is expected there will be a balance in the ITGS terminology between IT technical terminology and the terminology related to social and ethical impacts.***

***Please see generic markband information sheet on page 21.***

## 5. Improving Lima's transport system

**(a) (i) Describe what is meant by *social networking*.** ***[2 marks]***

*Answers may include*:
- online services that allow users to contact and make connections with other individuals
- social networking establishes interconnected online communities
- social networks are made of people who gather together online to share in a common purpose
- assumes all users have equal access to one another in an online community
- share and collaborate using social media (*i.e.* videos, images, text)
- specific examples such as *Facebook*, *Twitter*.

*Do not accept communicating with others – too vague.*
*Award **[1 mark]** for an aspect of social networking identified and award **[1 mark]** for the description of that aspect. Award a maximum of **[2 marks]** for the answer.*

**(ii) Different types of files can be uploaded to highlight the traffic problems described above.**

**Describe *two* appropriate types of files which could be uploaded *and* how they highlight the problem.** ***[4 marks]***

*Answers may include*:
- image files (accept file formats such as .jpg .gif) showing buses in large traffic jams / showing an accident
- audio files (accept file formats such as .mp3 .wmv) providing opinions about the service of trains / buses being delayed
- video files (accept file formats such as .mp4 .mov) – users may film situations like full buses, accidents on the route, large queues
- text / document files (accept file formats such as .txt .doc) describing a particular transport problem.

*Accept references to traffic and transport problems, but not passengers.*
*Do not accept a problem being stated only as a "traffic problem", a specific problem needs to be cited.*

*Award **[1 mark]** for each type of file identified and award **[1 mark]** for the description of how they highlight the problem. Award a maximum of **[4 marks]** for the answer.*

*Award **[1 mark]** if a candidate identifies two correct files types relating to the same scenario.*

**(b) Some managers of local businesses have realized that social networking may provide new business opportunities and have created company webpages on *Facebook*.**

**Explain why companies will use social networking websites to develop new business opportunities.** ***[6 marks]***

*Answers may include*:

- social networking websites can provide updated information frequently, for example, a new business opportunity such as informing users of new products or the opening of a new office
- social networking websites can keep users interested with latest changes/opportunities, for example, a new business opportunity marking the business known to more people
- many new potential customers are already using these networks to communicate with friends, for example, a new business opportunity providing users and potential users of a better or more interesting way of promoting products
- social networking sites are free
- social networking sites may have services not offered by websites such as join interest groups "like a product"
- social networking sites are used to target specific customers based on age, interest, gender *etc.*
- a presence on social networking sites may encourage customers to go to an official business website.

***[1–2 marks]***
*A limited response that demonstrates minimal knowledge and understanding of the topic. There may only be a reference to why companies use social networking websites and uses little or no appropriate ITGS terminology.*

***[3–4 marks]***
*A partial explanation that demonstrates some knowledge and understanding of the topic. There may be a reference to why companies use social networking websites. Some relevant examples are used within the response. There is some use of appropriate ITGS terminology in the response.*

***[5–6 marks]***
*A detailed explanation of the issue which demonstrates thorough knowledge and understanding of the topic and explains why companies use social networking websites to develop business opportunities. Relevant examples and appropriate ITGS terminology are used throughout the response.*

**(c) Although the *Facebook* page reporting system is not managed by the Lima authorities, they are using it to solve the transport problems that happen in the city of Lima.**

**The Lima authorities are considering implementing an official website for reporting transport problems.**

**To what extent is a social networking website preferable to an official website for reporting transport problems?** ***[8 marks]***

*Answers may include*:

- official website needs to be maintained and made sure to be working properly – additional costs involved
- no website hosting service is needed to store the website if a social networking service such as *Facebook* is used
- people may feel more at ease using a social networking website such as *Facebook* because they use it frequently
- one comment may trigger others and information may be greater on a social networking website
- the social networking website is probably used and known by citizens who use it for several purposes – an official website would have few uses and may not be known by users
- social networking websites such as *Facebook* already has applications for portable devices that are checked by users when they are away from home or their office
- comments may not always be true on a social networking website
- people may regard information on an official website as being more reliable or legitimate than on a social networking website
- social networking websites may not be available to all users
- some users may not feel comfortable using social networking websites.

***In part (c) of this question it is expected there will be a balance in the ITGS terminology between IT technical terminology and the terminology related to social and ethical impacts.***

***Please see generic markband information sheet on page 21.***

**SL and HL paper 1 part (c) and HL paper 3 question 3 markband**

| *Marks* | *Level descriptor* |
|---|---|
| ***No marks*** | • *A response with no knowledge or understanding of the relevant ITGS issues and concepts.*<br>• *A response that includes no appropriate ITGS terminology.* |
| ***Basic***<br>***1–2 marks*** | • *A response with minimal knowledge and understanding of the relevant ITGS issues and concepts.*<br>• *A response that includes minimal use of appropriate ITGS terminology.*<br>• *A response that has no evidence of judgments and/or conclusions.*<br>• *No reference is made to the scenario in the stimulus material in the response.*<br>• *The response may be no more than a list.* |
| ***Adequate***<br>***3–4 marks*** | • *A descriptive response with limited knowledge and/or understanding of the relevant ITGS issues and/or concepts.*<br>• *A response that includes limited use of appropriate ITGS terminology.*<br>• *A response that has evidence of conclusions and/or judgments that are no more than unsubstantiated statements. The analysis underpinning them may also be partial or unbalanced.*<br>• *Implicit references are made to the scenario in the stimulus material in the response.* |
| ***Competent***<br>***5–6 marks*** | • *A response with knowledge and understanding of the relevant ITGS issues and/or concepts.*<br>• *A response that uses ITGS terminology appropriately in places.*<br>• *A response that includes conclusions and/or judgments that have limited support and are underpinned by a balanced analysis.*<br>• *Explicit references to the scenario in the stimulus material are made at places in the response.* |
| ***Proficient***<br>***7–8 marks*** | • *A response with a detailed knowledge and understanding of the relevant ITGS issues and/or concepts.*<br>• *A response that uses ITGS terminology appropriately throughout.*<br>• *A response that includes conclusions and/or judgments that are well supported and underpinned by a balanced analysis.*<br>• *Explicit references are made appropriately to the scenario in the stimulus material throughout the response.* |