M13/3/ITGSX/HP1/ENG/TZ0/XX/M

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MARKSCHEME

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INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Higher Level

Paper 1

25 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 *eg* "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.

SECTION A

1. Libraries and e-book loans

(a) (i) Identify the steps a new library user must follow to log in to the library and "borrow" an e-book. ***[4 marks]***

Answers may include:
- register at the library as a new user or go to the webpage
- receive new username and password
- enter username and password
- search for e-book (by category, by author, *etc*)
- select book and check for availability
- if the book is available, select it for download
- select the file type for the e-book
- download the selected book to the user's device
- if not available, make a reservation / be placed on a waiting list for the book.

*Award **[1 mark]** for any of the points stated above up to a maximum of **[4 marks]**.*

(ii) When e-books are purchased by the library it needs to record information about them in the relational database. All books require ISBN, publisher information, author and title. State *two* pieces of additional information that a library would need to record about an e-book. ***[2 marks]***

Answers may include:
- type of license, for example multi-user, site license
- file format of the e-book
- file size of the e-book
- year of publication
- edition of the book
- genre (type of book)
- number of pages
- book summary
- book review.

***N.B.** Do not accept any information about the person borrowing the book.*

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

(b) (i) Some e-book readers use a proprietary file format, others use generic file formats. Explain *one* advantage for the company who produces and sells the e-books of using a proprietary format. ***[2 marks]***

Answers may include:

- proprietary formats provides a format that allows improvements/special functionality for the e-book
- the company's e-books may only be used on their specific e-book reader (*ie* may not be downloaded into other readers, will increase sales of their own readers)
- some proprietary formats do not allow sharing, for example copying, printing or side-load (move between reader devices).

N.B. *The advantage must be for the company.*

Award ***[1 mark]*** *for identifying an advantage.*
Award an additional ***[1 mark]*** *for an explanation of the advantage up to a maximum of* ***[2 marks]****.*

(ii) Explain why a relational database has been chosen as the basis of the lending system. ***[4 marks]***

Answers may include:

- relational database avoids data redundancy, duplication of data – data will be saved once in a record and information tables is linked
- avoiding errors in data entry – information will only be entered and saved once
- less storage space needed – duplication of data would mean additional storage space would be required.

[1 mark]
A limited response that indicates very little understanding of the topic or the reason is not clear.

[2–3 marks]
A reasonable description of why a relational database has been chosen with reference to the lending system. The answer may be unbalanced and lack appropriate reasoning at the lower end of the band.

[4 marks]
A clear, detailed and balanced explanation of why a relational database has been chosen with explicit reference to the lending system.

N.B. *Maximum of* ***[1 mark]*** *for no reference to the lending system.*

(c) A school library has introduced the loan of e-books. Discuss the impact on the students. ***[8 marks]***

Answers may include:

Positive impacts on the students

- students may be able to "carry" many books in one electronic device without worrying about the weight
- students can make "annotations" electronically without scribbling on a book owned by the library
- students can combine the use of a book and a dictionary in case some clarification of terms is needed
- some electronic readers may have an application that will "read" the book (audio format)
- font size and background shades/colours can be changed to help readers with vision problems
- if there is a technical problem, it may be possible for the student to borrow the e-book again
- students may be able to collaborate using e-book note-taking features
- students can access the library 24/7 / students do not have to go physically go to library
- students may access to a wider range of e-books because e-books do not take up physical space
- student will not have to worry about missing the due date for returning the book which is automatically managed by the system
- student will not need to spend time in the library searching for a book – searching can now be done by a query on the e-reader.

Negative impacts on the students

- students may need training to use the electronic reader
- students may not have access to e-books (*eg* no e-book reader, no Internet access, malfunctioning reader)
- students may be concerned with the e-book reader being stolen, damaged or lost
- students will spend additional hours viewing a computer screen
- the e-book reader could lead students to be distracted.

N.B. *Do not accept answers about how the student feels about using an e-book.*

Please see generic markband information sheet on page 25.

2. E-waste – recycling and carbon footprint

(a) (i) State the formula needed to calculate the value in D3. ***[1 mark]***

$=B3\times C3$

N.B. *Do not accept responses without =.*

Award ***[1 mark]*** *for the answer identified above.*

(ii) State the formula needed to calculate the value in D8. ***[1 mark]***

$=SUM(D3:D7)$
$=D3+D4+D5+D6+D7$

N.B. *Do not accept responses without =.*

Award ***[1 mark]*** *for any of the answers stated above.*

(iii) Identify the steps required by the user to produce the chart below. ***[4 marks]***

Answers may include:
- input the data in the spreadsheet
- select columns A (type of equipment) and D (total CO2 emissions grams)
- click "create chart" button
- select graph type
- add data labels to graph
- add the title.

Award ***[1 mark]*** *for any of the points identified above up to a maximum of* ***[4 marks]****.*

(b) It is generally desirable to recycle e-waste. Explain *three* effects of the irresponsible disposal of e-waste. ***[6 marks]***

Answers may include:

- harmful chemicals may be released contaminating the area (*ie* electronic equipment contains lead and other metals that when released may reach the water streams that are used for human or animal consumption)
- the creation of large dump areas – electronic equipment occupies large areas – computer monitors, cases, mainboards, cables
- health problems for people working at or near the recycling sites (*ie* higher levels of dioxins were found in local population)
- dangerous air pollution where e-waste is burnt
- negative effect on wildlife, animals and water life
- e-waste may be sent to locations that are not setup to responsibly dispose of e-waste.

*Award **[1 mark]** for each effect identified and **[1 mark]** for an explanation off that effect up to a maximum of **[2 marks]**.*
Mark the first three effects identified.
*The maximum mark for this question is **[6 marks]**.*

(c) To what extent can a government encourage the responsible disposal and recycling of IT equipment? ***[8 marks]***

Answers may include:

- government requires retailers of the equipment / manufacturers to take back obsolete equipment and dispose of it responsibly
- government can provide a service to collect obsolete equipment from homes/offices
- government may provide legal disposal/recycling locations
- government will offer financial incentives to customers (businesses, individuals, schools, …) wishing to upgrade IT equipment if they take their old equipment to official recycling locations
- government provides information in TV commercials, websites, help phone line about the ways to recycle and the dangers of e-waste
- government conducts regular recycling campaigns
- government does not allow the export of e-waste to countries with poor disposal practices
- government will legislate and enforce the responsible disposal of IT equipment
- government encourage schools to develop education programs about the responsible disposal of IT equipment
- government requires all government agencies to use proper disposal and recycling of IT equipment.

***N.B.** Government action is required.*

Please see generic markband information sheet on page 25.

3. Patient monitoring

(a) (i) State *two* vital signs, other than body temperature, that can be monitored using IT systems to inform doctors of the condition of a patient undergoing surgery. ***[2 marks]***

Answers may include:
- heart rate
- pulse
- oxygen in blood
- breathing rate
- blood pressure.

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

(ii) Identify the steps taken by an IT monitoring system to detect when a sign or condition is abnormal and the patient requires special attention. ***[4 marks]***

Answers may include:
- enter limits
- enter acceptable limits for the condition in the IT monitoring system
- sensor measures the required condition
- measurement is sent to IT monitoring system software
- analogue measurements are converted to a digital format
- the patient's current condition is compared with acceptable limits stored in the IT system
- if outside limit, an alert message appears.

***N.B.** The focus is on the IT monitoring system. Do not consider attaching the sensors.*

*Award **[1 mark]** for any of the points identified above up to a maximum of **[4 marks]**.*

(b) Analyse the implications for doctors when the hospital implements new patient monitoring equipment for health care. ***[6 marks]***

Answers may include:

- doctors can choose to directly receive patient data/alerts when conditions change
- continuous medical information of patients will be available to the doctor
- the warning signs of the IT monitoring system may alert doctors to conditions that they were not aware of
- doctors may need to carry an alert device
- doctors may have access to better results (*ie* additional analysis, more reports)
- doctors will need to be trained to use the new equipment
- new patient monitoring system may save the doctor time allow them to see more patients
- doctor may be assigned more patients under the assumption that they need to physically visit and check each patient less often with a IT monitoring system
- issues of liability for the doctor if something goes wrong (*eg* if a doctor fails to receive an alert and a patient dies ...)
- doctor can experience technical difficulties when the new patient monitoring equipment is implemented that hinders their work
- doctor can better determine which patients require immediate medical care.

N.B. *Only award marks for the implications for doctors.*

Do not accept personal considerations for doctors such as stress, distrust of equipment.

[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) Training will be provided by the hospital for staff to use the new IT patient monitoring system. It was decided to use a combination of online training and practical hands-on training. Justify this decision. ***[8 marks]***

Use the follow tables to award marks using the generic markband. The response must justify a combination of both online training and practical hands-on training. These two must be used in combination with one another and not just compared.

N.B. *If a response addresses online training and hands-on training independently, award a maximum of* ***[6 marks]****. For* ***[7–8 marks]****, a combination of both online training and hands-on training must be justified.*

Online training

Advantages	**Disadvantages of online training addressed by hands-on training**
• can be done anytime anywhere by trainees • trainers will not need to be on site • may be repeated (if a tutorial) as many times as needed by trainees • consistent training is delivered to all trainees • certain monitoring processes may be simulated.	• no personal guidance may be provided (like "place hand on this handle and move like this") • does not provide practical hands-on experience with the IT monitoring system • cost of implementing/creating programs to do the online training (*ie* hands-on training and training materials may be less expensive to provide) • possible access failure (*eg* hardware failure, problems with Internet access).

Hands-on training

Advantages	**Disadvantages of hands-on training addressed by online training**
• trainees will experience the real feel when using the IT monitoring system • trainees may ask questions as difficulties emerge • trainers can get an overview of the difficulties that trainees experience when using the IT monitoring system • training is delivered at scheduled time and place so that there are no interruptions.	• real equipment is needed for some aspects of the training sessions • trainer needs to be at the site (hospital) • training needs to be booked for a specific time • if there are too many trainees then several sessions may need to be programmed • cost of training sessions and use of equipment for training may be high (pay a trainer, room for training) and equipment might need to be renewed after each use.

N.B. *Do not accept travel costs for hand-on training. Accept cost of IT equipment for online training.*

Please see generic markband information sheet on page 25.

SECTION B

4. Information systems management

(a) (i) Identify *three* responsibilities of a typical information systems manager. ***[3 marks]***

Answers may include:
- determining end-user IT needs in business and the solutions
- planning and implementing the IT budget (*ie* hardware, software, network components)
- implementing and running of routine IT processes (*ie* scheduling upgrades, anti-virus checking, print services, backups, access to network services and Internet access)
- purchasing and installation of appropriate software license
- installation of new IT systems (*ie* hardware, software, network services)
- providing secure access to the business network for remote users
- providing end-user support
- line management of the personnel in the department
- managing IT crisis situations and problems in the business
- contribute to policy regarding quality standards
- creation of the policy for end users.

*Award **[1 mark]** for each responsibility of a typical IT systems manager up to a maximum of **[3 marks]**.*

(ii) State the job titles of *three* of the specialist staff who typically report to an information systems manager. ***[3 marks]***

Answers may include:
- network manager
- IT support manager
- development manager
- network technician
- support technician
- help desk staff
- database administrator
- project manager
- systems analyst
- programmer.

*Award **[1 mark]** for each job up to a maximum of **[3 marks]**.*

(b) In the past, *Queen Bee Enterprises Inc.* valued staff who showed initiative. However, this led to the development of independent IT systems by different departments in the company.

Explain the problems that may arise when departments are given freedom to develop independent IT systems. ***[6 marks]***

Answers may include:
- quality may be inadequate if staff lack development expertise
- applications may be incompatible between each other
- file formats may vary widely
- files may be unreadable by standard office software
- maintenance may be difficult because of non-standard practices
- help desk staff may take too long trying to understand diverse systems
- documentation is likely to be nonexistent or inadequate
- the applications may be understood only by their creators
- the applications may be inadequately tested
- the applications may be unpopular with those who did not develop them
- lack of integration of IT systems in the business.
- there may be security issues due to multiple software.

Marks	Level descriptor
0	No knowledge or understanding of ITGS issues and concepts. No use of appropriate ITGS terminology.
1–2	Minimal knowledge and understanding of ITGS issues and concepts related to the use of feasibility studies. Minimal use of appropriate ITGS terminology. No reference is made to the scenario in the stimulus material. The response is theoretical.
3–4	A description or partial examination with limited knowledge and/or understanding of the role of feasibility studies in system development. Some use of appropriate terminology relating to maintenance and deployment. Some reference is made to the scenario in the stimulus material.
5–6	A thorough examination with a detailed knowledge and understanding of maintenance and deployment. An examination that uses appropriate ITGS terminology relating to software maintenance. Explicit and relevant references are made to the scenario in the stimulus material.

(c) The senior management team of *Queen Bee Enterprises Inc.* has decided to include the information systems manager in the team.

To what extent is it an advantage to have an information systems manager as part of the senior management team? ***[8 marks]***

Answers may include:

Positive considerations

- can influence business decisions based on IS knowledge
- can suggest IS suitable for planned changes
- can represent views of IS staff
- can suggest cost savings in IT procurement
- can argue for IT developments at top level.

Potential problem areas

- may not understand business requirements
- may be more concerned about technological issues than business plan
- may enforce systems that are disliked by Department Managers / departments
- Department Managers / departments may take less interest in IT system.

Please see generic markband information sheet on page 25.

5. IT system development

(a) (i) With reference to systems development, define the term *prototype*. ***[2 marks]***

Answers may include:
- an early model of a proposed system
- partially functional or fully functional model of an IT product
- used for demonstration purposes
- can be used to help discussions with client.

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

(ii) Describe *two* essential components of any project plan. ***[4 marks]***

Answers may include:
- investigation of existing systems
- feasibility study
- requirement specification
- project schedule
- product design
- product development and technical documentation
- testing
- implementation
- client and end-user evaluation.

*Award **[1 mark]** for each component identified and an additional **[1 mark]** for a description of that component up to a maximum of **[2 marks]**.*
*The maximum mark for this question is **[4 marks].***

(b) The design of user-friendly interfaces is a major part of any new system development project. Below are examples of two different types of interface.

Contrast the usability of the two interfaces shown here. ***[6 marks]***

Answers may include:

Interface A

- appearance is cluttered and difficult to use (*ie* too much information, too much functionality on one screen)
- requires specialist terminology to use the interface
- many options can be set at one time
- related functions are logically grouped
- end-user cannot change the layout
- familiar interface for specialist/advanced users.

Interface B

- easier to navigate (*ie* fewer options appear on the screen at a time)
- icons represent functions instead to text options
- icons can be selected by tapping instead of clicking with a mouse
- on-screen grouping of icons can be determined by the end-user
- intuitive interface for non-specialists.

[1–2 marks]

Candidate conveys a limited understanding of the difference between the two different types of interface. The examples contrasted will be identified or partially described in isolation.

[3–4 marks]

Candidate conveys some understanding of the differences between the two different types of interface, but they would have been described in isolation.

[5–6 marks]

The candidate provides an explicit and direct contrast of the two different types of interface with the use of appropriate terminology.

(c) With reference to examples you have studied, to what extent does the successful implementation of a new IT system depend on regular consultation between the developers, clients and end-users? ***[8 marks]***

Answers may include:

- the developer gets to know exactly what the client wants
- needs might change during development
- understandings may be refined by frequent consultation
- end-users may not want to use the system if they are not involved
- new ideas can develop as the project progresses
- costs might change, requiring reconsideration of nature of solution
- if clients are involved regularly, they are more likely to be satisfied with the solution
- if clients are regularly involved, problems can be immediately solved saving time in the long run
- developers are less likely to be blamed for shortcomings if the project is regularly discussed with client.

Please see generic markband information sheet on page 25.

SECTION C

6. Speech to text software

(a) Identify *six* steps that speech recognition systems must go through in converting speech into text. ***[6 marks]***

Answers may include:

- capture the speech using a microphone
- the microphone converts the sound waves into an analogue signal
- software converts captured analogue signal into a digital representation
- digital representation is held in memory as the speech is being captured
- software removes unwanted noise and sounds
- the digitized sound is normalized so that there is consistent loudness
- digital sounds or words are compared to a database of stored word patterns and associated text
- the "best match" for the text is then automatically displayed
- end-user is given the opportunity to edit the text file
- text file is saved.

*Award **[1 mark]** for each step up to a maximum of **[6 marks]**.*

(b) Explain why subtitling software works better when re-speaking is used rather than using the original voices of the people being interviewed. ***[6 marks]***

Answers may include:

- re-speaking uses standard voice to be processed / voices differ a great deal
- software has been trained to understand the voice of the speaker
- speaker can speak at specified standard required by the software (*ie* optimal speed, intonation)
- speaker can avoid problematic words such as foreign words
- speaker can insert meaningful breaks so that words are properly recognized
- regional accents not a problem.

Marks	Level descriptor
0	No knowledge or understanding of ITGS issues and concepts. No use of appropriate ITGS terminology.
1–2	Minimal knowledge and understanding of ITGS issues and concepts related to pattern matching. Minimal use of appropriate ITGS terminology. No reference is made to the scenario in the stimulus material. The response is theoretical.
3–4	A description or partial examination with limited knowledge and/or understanding of the role of speech recognition. Some use of appropriate terminology relating to speech recognition. Some reference is made to the scenario in the stimulus material.
5–6	A thorough examination with a detailed knowledge and understanding of speech recognition. An examination that uses appropriate ITGS terminology such as how speech recognition can have limitations. Explicit and relevant references are made to the scenario in the stimulus material.

(c) To what extent will the use of speech to text software be a feature of future IT systems? ***[8 marks]***

Answers may include:

Advantages

- it allows interaction of a range of persons with the computer that may not have access otherwise (*eg* disabled, young children)
- the size of the device can be small because it is not limited to keying in information
- it reduces the skill level needed so less training of users needed and this reduces costs
- faster interaction because no typing
- increases productivity.

Disadvantages

- it is a complex area to develop
- problems of accents
- problems of language
- problems of talking speed
- in a room full of people, there will be interference from the surroundings.

Please see generic markband information sheet on page 25.

7. Robotic vacuum cleaners

(a) (i) Identify *three* sensors that would be useful on a robotic vacuum cleaner. ***[3 marks]***

Answers may include:
- optical sensor
- motion/touch sensor when coming in contact with objects
- sensor to determine the distance to the wall
- sensor to determine effectiveness of suction
- sensor to determine when no more dirt is to be suctioned
- sensor that detects a possibility of falling over an edge (cliff sensor).

N.B. *Do not accept battery charger or timer.*

Award ***[1 mark]*** *for each point up to a maximum of* ***[3 marks]****.*

(ii) Identify *three* output devices that would be useful on a robotic vacuum cleaner. ***[3 marks]***

Answers may include:
- alert signal for when the battery is low
- alert signal for dust bin is full
- visual display for operating time remaining
- visual display for the level of battery charge
- visual display fullness of bin
- brushes
- wheels.

Award ***[1 mark]*** *for each point up to a maximum of* ***[3 marks]****.*

(b) Explain how expert systems can be used to help the manufacturer develop the next generation of robotic vacuum cleaners. ***[6 marks]***

Interpretation A: the expert system is being used to design a new generation of robotic vacuum cleaners.

- the knowledge engineer works with the human expert to describe the problem *ie* the factual information, procedural rules connected with robotic vacuums
- the knowledge engineer translates that knowledge into a knowledge base
- and designs an inference engine to process that knowledge
- the inference engine contains rules to help solve problem in designing the new robot
- fuzzy logic may be used to create rules for situations that are inexact
- a user interface allows the designers to interact with the expert system to get advice.

Interpretation B: the expert system is being used to run the vacuum.

- the knowledge engineer works with the human expert to describe the problem *ie* how to determine if the floor is still dirty
- the knowledge engineer translates that knowledge into a knowledge base
- and designs an inference engine to process that knowledge
- the inference engine contains rules to address the problem
- fuzzy logic may be used to create rules for situations that are inexact *ie* more dirty/less dirty
- the robot uses the inference engine to determine how to proceed.

Marks	Level descriptor
0	No knowledge or understanding of ITGS issues and concepts. No use of appropriate ITGS terminology.
1–2	Minimal knowledge and understanding of ITGS issues and concepts related to pattern matching. Minimal use of appropriate ITGS terminology. No reference is made to the scenario in the stimulus material. The response is theoretical.
3–4	A description or partial examination, with limited knowledge of expert systems. Some use of appropriate terminology relating to expert systems. Some reference is made to the scenario in the stimulus material.
5–6	A detailed knowledge and understanding of how expert systems work. An examination that uses appropriate ITGS terminology relating to expert systems. Relevant references are made to the scenario in the stimulus material.

(c) Considerable research is taking place into the development of humanoid/android robots to carry out a range of tasks that are currently carried out by humans.

To what extent is the future of robotics likely to be more about single purpose devices such as a vacuum cleaner rather than humanoid/android robots? ***[8 marks]***

Answers may include:

Factors that encourage further development/use of single purpose devices

- less complex therefore less expensive to produce, purchase and maintain
- a wide variety of uses in areas which are unsafe for humans (Mars, inside active volcano craters, bomb detection in wars *etc*)
- require less battery power (less need to recharge, no need for a power source that holds lots of energy)
- not threatening *ie* no queasiness factor (there is now a term for this "uncanny valley")
- useful for very specific purposes *ie* assembly lines in factories.

Factors that limit single purpose devices

- lack of flexibility
- trend to multipurpose devices in other areas (*ie* phones) leads us to expect them to do more
- users want everything in one device.

Factors that encourage development of androids

- need for care of aging/invalid/disabled people with fewer workers to do that
- uses that require human movement but are too dangerous for humans, *ie* security robots that patrol
- use as research tool to study human body structure and mechanics *ie* in building a robot that moves like humans you learn more about how humans move
- can perform jobs that are usually done by humans (receptionist, operate equipment designed for the human form *etc*)
- entertainment (*ie* animatrons in theme parks)
- to study human interaction and cognition (the android's ability to elicit human-directed social responses enables researchers to employ an android in experiments with human participants as an apparatus that can be controlled more precisely than a human actor. Wikipedia, Android science).

Factors that limit development of androids

- no long lasting power sources available yet
- extremely complex – *ie* very hard to develop human traits especially vision
- uncanny valley – the idea that "when human features look and move almost, but not perfectly, like natural human beings, it causes a response of revulsion among human observers" (wikipedia)
- loss of jobs that previously could only be done by humans
- legal issues – who is responsible if the android does something problematic
- shouldn't human beings be caring for human beings instead of robots?

Please see generic markband information sheet on page 25.

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