M23/3/ITGSX/HP1/ENG/TZ0/XX/M

Diploma Programme
Programme du diplôme
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Markscheme

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Information technology in a global society

Higher level

Paper 1

24 pages

Critical Thinking – explanation, analysis and evaluation

These trigger words often signal critical thinking. The bold words are the key terms in the various criteria.
Explanation – *Because, as a result of, due to, therefore, consequently, for example*
Analysis – *Furthermore, additionally, however, but, conversely, likewise, in addition, on the other hand, whereas*
Evaluation – *My opinion, overall, although, despite, on balance, weighing up*

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. Intelligent Transport Monitoring (Government and Politics / Environment)

(a) (i) State **two** file formats that could be used for the images of car number plates. **[2]**

Answers may include:
- Jpg/jpeg
- Tiff
- PNG
- Bitmap
- Gif

*Award **[1]** for each file format stated up to **[2]**.*

(ii) Identify **two** pieces of information, in addition to the location of the vehicle, that could be communicated from a vehicle to the monitoring centre. **[2]**

Answers may include:
- Speed of travel / stopping (lack of speed)
- Direction of travel
- Rate of acceleration/braking
- Distance travelled
- Registration number / number plate number
- Time of event / time reading taken

*Award **[1]** for identifying each other piece of information that could be communicated from the vehicle to the monitoring centre up to **[2]**.*

(iii) The government is considering using the data from the Intelligent Transport Monitoring System (ITMS) to create a model of the traffic patterns in a city.

Identify **two** factors that should be taken into account when developing this model. **[2]**

Answers may include:
- Quality of the data which is used in the model (GIGO)
- Quantity of the data which is used in the model
- Bias when deciding which data should be used to develop the model.
- Number of variables taken into account
- Sample size / variety (is the data collected at various times of the day and at multiple locations)

*Award **[1]** for identifying each factor that should be taken into account when developing this model up to **[2]**.*

(b) (i) The government also wants to use the Intelligent Transport Monitoring System (ITMS) to produce a simulation of traffic patterns.

Explain **one** benefit of producing a simulation of traffic patterns. **[2]**

Answers may include:
- enables testing of extreme situations (e.g. congestion due to a big event)
- In order to predict the outcomes in order to prevent problems.

- can easily test outcomes from potentially dangerous situations
- In order to avoid these situations happening.

- obtain results immediately
- rather than waiting for a specific event to happen in reality.

- help in predicting factors that promote a smooth, convenient and time efficient commute
- additional mark for examples of these factors or solutions.

- by using simulations to model the effect of changes to the road network conditions e.g. like the timing to traffic lights, or creating alternative routes.

*Award **[1]** for identifying a benefit of a simulation and **[1]*** for a development of that benefit up to ***[2]**.*

(ii) Explain **one** advantage of outsourcing the development and operation of the Intelligent Transport Monitoring System (ITMS) to a company in another country. **[2]**

Answers may include:
- Not the technical skills within Uganda
- Therefore, it is unlikely the system will be developed to the specifications required

- Existing traffic monitoring systems may exist in other countries.
- Therefore, the Ugandan Government may be able to purchase an existing system and get it modified which will be quicker and cheaper than developing it in house.

- Employment costs might be lower in another country.
- Therefore this would lower the overall cost of the project.

- Government of Uganda will not need to invest the money needed in providing hardware and employing people to run the system in their own country.
- Thereby lowering the cost of the project for the government.

*Award **[1]** for identifying an advantage of a simulation and **[1]*** for a development of that advantage up to ***[2]**.*

(iii) Explain **one** disadvantage of outsourcing the development and operation of the Intelligent Transport Monitoring System (ITMS) to a company in another country. **[2]**

Answers may include
- Data protection rules may differ from country to country
- and this might put the data at risk.

- The foreign company may not understand the problem which the Ugandan government is trying to solve
- because it is different from the problems which they experience in their own country.

- Ugandan government may lose control over the project
- and find it difficult to direct the project according to their needs.

*Award **[1]** for identifying a disadvantage of a simulation and **[1]*** for a development of that disadvantage up to ***[2]**.*

(c) Discuss whether the advantages for the government of monitoring the movement of vehicles in the Republic of Uganda outweigh the disadvantages. **[8]**

Answers may include:

Advantages

- Will be able to cut down on crimes e.g., which involve 'get away cars'.
- Allows government to track down cars in an emergency or if there is theft.
- Helps the government maintain safer roads as citizens drive more safely as they know they are being monitored
- Could help government see where the traffic is, and therefore do something to improve the traffic situation
- Could be used to see what time of day the traffic is worst / best.
- Could be used to see where there are regular traffic jams.
- Could be used to identify roads which are not heavily used.
- Could be used to see what types of vehicles use which routes.
- Could be used to see what the speed of vehicles travelling on different roads is (for example to recommend speed bumps or speed cameras).
- Could be used to deploy emergency services or traffic police in the case of an unforeseen event or emergency.
- Extra jobs are created by the implementing the system in various sectors.

Disadvantages

- May make citizens think the government is spying on them I.e. breakdown of trust.
- Could be used to suppress right to freedom of movement or association I.e. see where people are and who they are near.
- If the data was hacked, criminals would be able to tell when people are not at home and this might lead to increased crime.
- Will cost the citizens money as they need to pay for the system during registration which could lead to problems for the government if citizens refuse to pay this fee.
- May lead to a black economy or ways that the ITMS will be circumvented.
- Cost of the system for the government
- Government would need to employ people to implement, maintain and monitor the new system. This would include training.
- Government would need to roll out an information campaign to inform people about the system which will cost money and require staff.

Please see generic markband on page 24.

2. EyesOnU; (Home and Leisure)

(a) (i) State the primary key in the Users table in **Figure 3**. **[1]**

- UserID

(ii) State the relationship between the Users table and Images table in **Figure 3**. **[1]**

- One to many

(iii) Identify **two** reasons for using a relational database to store this information. **[2]**

Answers may include:

- Reduces redundant data / redundancy
- Saves storage space
- Reduces errors (caused by repeating data un-necessarily)
- Allows for database to be normalised (avoids anomalies)
- Increases integrity by avoiding update errors (data is updated in one table but not in another when the data is not in a relational database)

*Award **[1]** for identifying each reason for using a relational database up to **[2]**.*

(iv) Describe the difference between the internet and the World Wide Web. **[2]**

Answers may include

- Internet is the physical networks of computers which spans the world
- WWW is the websites / webpages stored on webservers which are viewed in a browser.

*Award **[1]** for describing each difference between the Internet and the World Wide Web up to **[2]**.*

(b) The *EyesOnU* facial recognition tool has drawn criticism from privacy campaigners who say that the tool could be used to compromise a user's privacy. EyesOnU has stated that their privacy policy will prevent this.

Explain **three** rules that could be included in a privacy policy for *EyesOnU*. **[6]**

Answers may include:

- Images will only be used for the purpose intended.
- This will mean that users must specify the purpose for which the image is intended when it is uploaded and if they intend to use for other purposes must complete a check box to acknowledge they give their consent for the image to be other uses.

- Images will only be shared with the consent of the subject
- So if another user wishes to use an image they must contact the owner of the image before they can use it (this may include a check box where the subject of the image formally gives permission for it to be used).

- Images will be stored for a limited time only.
- Which means that the images stored on *EyesOnU* will automatically be deleted unless the subject provides permission for it to be kept on the website for longer.

- Details of the image owner will not be shared with third parties.
- If the image owner wishes to share their personal details with third parties (such as age, location, gender etc), they must give additional consent.

- Only relevant information should be collected / stored.
- For example the address of the person need not be stored along with the image as it is not needed for the purpose of searching the pictures.

*Award **[1]** for identifying each rule that would be included in a privacy policy for EyesOnU and **[1]** for a development of that reason up to **[2]**.*

*Mark as **[2]** + **[2]** + **[2]**.*

(c) There have been concerns raised about the way people use facial recognition sites like *EyesOnU*.

To what extent is it the responsibility of the website owners **and** the users of *EyesOnU* to ensure that users act ethically? **[8]**

Answers may include:

Responsibility of the users of *EyesOnU*

- *EyesOnU* cannot be held responsible for the actions of every user and appropriate use of the service requires users to act responsibly
- Each user must read the privacy policy and agree to its terms before using the service.
- Each user must only use the site for what it was intended (search for their own photographs).
- Users Should take responsibility for their own behaviour, for example they should not use the site to carry out activities such as spying on other people, stealing another user's identity or tracking another user.

Responsibility of *EyesOnU*

- Allows users to check to see if their photos are being used on other websites without permission
- *EyesOnU* has a set of terms and conditions and it is a requirement that every user signs this before they can use the service.
- *EyesOnU* does not allow minors to use the service (may require ID check)
- *EyesOnU* uses algorithms that are not harmful to the users. This may include adapting algorithms used that have proved to be harmful.
- Should take appropriate action when users are seen to be acting inappropriately / should be cognizant of the way the service is being used.
- Should provide appropriate duty of care to users, for example, to deal with conflict resolution.
- EyesOnU should ensure that the photos that are uploaded to the site are only of the face of the registered user and does not contain any other images of other people or parts of the body.

Conclusions

- It is unrealistic for either the users or *EyesOnU* to be the only party who is acting unethically. Both sides must act ethically.
- Users must police their own behaviour so that it is easier for *EyesOnU* to police the behaviour of all users.
- Ethical behaviour, and its promotion, should lead to the development of trust between *EyesOnU* and its users, or between users.
- It could be difficult to verify that users are only uploading their own images and not engaging in wrongful activities

Please see generic markband on page 24.

3. Fake news (Health / Education)

(a) (i) State **two** output devices on a smartphone. **[2]**

Answers may include
- Screen.
- Speakers.

*Award **[1]** for stating each output device on a smartphone up to **[2]**.*

(ii) Identify the steps used in public and private key encryption. **[4]**

Answers may include:
- Private and public keys are generated
- User A has a message to send to User B
- User A gets User B's **public key**
- User A **encrypts** the message,
- using User B's **public key**
- Encrypted message / cypher text is sent to User B
- User B **decrypts** the message,
- using their **private key**.

*Award **[1]** for identifying each step in public and private key encryption up to **[4]**.*

(b) It has been proposed that the following measures could be introduced to reduce the risk of users spreading false information:
- Limiting the size of the messaging app groups.
- Limiting the number of times a message can be forwarded.
- Labelling messages as being forwarded.

Analyse this proposal. **[6]**

Answers may include:

Reasons that support the proposal
- Limiting the size of the group - fewer people will see a message in a particular group
- Limiting the size of the group - people might be more selective about who they invite to a group they have created
- Limiting the number of times a message can be forwarded - there is a reduced risk of a message 'going viral'.
- Labelling messages as being forwarded -people will be able to see that the message has not been written by the person who forwarded it.

Reasons that do not support the proposal
- Limiting size of group - users may simply make several groups to get around the group size limit
- Limiting forwarding – message may still reach a large number of people in groups
- Labelling messages as forwarded – some people could miss this if it is not evident enough
- Labelling messages as forwarded - Could get around forwarding restrictions by retyping the information or by taking a screen shot and sending that.

Analysis
- Only slows the dissemination of false information, but does not stop it
- The technical solution to the problem may be less effective than inculcating good behaviour in the users of these messaging apps.
- Users of this messaging service may use other similar services so the problem is displaced rather than resolved.
- Users of the service may find ways to get around the restrictions

Marks	Level descriptor
0	No knowledge or understanding of ITGS issues and concepts. No use of appropriate ITGS terminology.
1–2	A limited response that identifies reasons why the introduction of control will reduce the sharing of false information. Uses little or no appropriate ITGS terminology. No reference is made to the scenario in the stimulus material. The response is theoretical and descriptive. Addresses one of the proposed solutions.
3–4	A description or partial analysis of whether the introduction of controls will reduce the sharing of false information. There is some use of appropriate ITGS terminology in the response and some reference to the scenario in the stimulus material. Addresses one **or** two of the proposals.
5–6	A balanced analysis of whether the introduction of controls will reduce the sharing of false information. Explicit and relevant references are made to the scenario in the stimulus material. There is appropriate ITGS terminology throughout the response. Addresses two **or** three of the proposals.

(c) To what extent is it the responsibility of the individuals within these communities to address the issue of false information being spread on social media? **[8]**

Answers may include:

Individuals can take responsibility for their use of social media by:

- Individuals should take more responsibility for fact checking information they receive /
- Individuals should try to gather information from a range of sources to determine the veracity of the information rather than to assume everything they receive is true.
- Individuals should be accountable for their own actions such as forwarded information that may be false
- Individuals should not act on the information without considering the implications of their actions.
- Individuals are responsible for their own well being if this is linked to their use of the messaging app.
- Users who are admins of messaging groups have a responsibility to remove users (and messages) who are posting irresponsibly.
- Users can remove themselves from groups which are spreading false information.
- Users should report the fake news to others on the group (or to the social media company or other authorities)

Individuals are unable to take responsibility for their use of social media because:

- If the news provider is a monopoly, what else can individuals who want access to news on the internet do?
- As the users may not be able to afford a different internet provider (the app is free), they are effectively trapped / locked in to this service.
- Many of the features of social media platforms, such as no limits on the number of other users a message can be forwarded to built in, and cannot be managed by individuals
- They may not be sufficiently informed to understand the impacts of their actions or inactions.

Please see generic markband on page 24.

Section B

4. SLF Law

(a) (i) Identify **two** components of an expert system. **[2]**

Answers may include:
- Knowledge base
- Inference engine
- User interface

*Award **[1]** for identifying each component of an expert system up to **[2]**.*

(ii) Outline **one** advantage of using a Gantt chart rather than a PERT chart. **[2]**

Answers may include:

- Use of a Gantt chart creates a clear visualization of the process
- Whereas a PERT chart can become very complicated.

- A Gantt chart allows more than one task being carried out concurrently to be easily displayed.
- Whereas this is not so straight forward for the PERT chart.

- A Gantt chart is more flexible
- This offers more options than a Pert chart for changes

Award **[1]** for identifying an advantage of a Gantt chart over a Pert chart and **[1]** for a development of that advantage up to **[2]**.

(iii) Identify **two** types of machine learning. **[2]**

Answers may include:
- Supervised
- Unsupervised
- Reinforcement

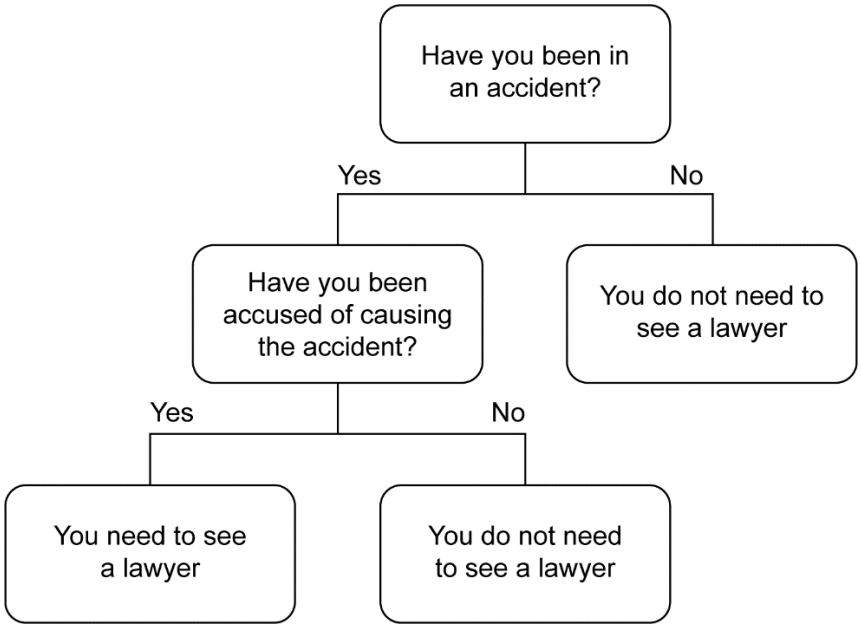
*Award **[1]** for identifying each type of machine learning up to **[2]**.*

(b) (i) **Figure 6** shows part of a decision tree where a person has been in an accident and may need a lawyer.

Study the rules below, then copy and complete the decision tree.

- A person has been in an accident.
- If the person has been in an accident **and** has been accused of causing the accident, they will need a lawyer.
- If the person does not meet both these requirements, they will receive the following message: “You do not require a lawyer”.

Example response:



*Award **[1]** for the correct structure of the decision tree*

*Award **[1]** for the correct text within the text boxes*

*Award **[1]** for the correct Y/N labels of the decision tree*

(ii) Distinguish between white-box testing and black-box testing. **[3]**

Answers may include:

Black box
- tester doesn't know anything about the internal working of the system
- tester needs to know what the software will do
- focuses on the behavior of the software from the end-user perspective
- high level testing
- Mostly done by software testers
- Functionality testing.

White box
- checks the internal functioning of the system
- based on code
- low level testing
- tester needs to know how the software works
- Very thorough
- Easy to automate
- Logic testing
- Time consuming.

*Award **[1]** for identifying a difference between white box and black box testing and **[1]** for each development of that difference up to **[3]**.*

(c) *SLF Law* have decided to purchase the Quick Research expert system.

To what extent will the use of an expert system like Quick Research be beneficial to *SLF Law*? **[8]**

Answers may include:

SLF
Will be beneficial

- Saves time for potential clients as they will be able to make initial investigations into whether they need to see a lawyer independently.
- Will allow lawyers can spend time on more important tasks rather than mundane tasks / Lawyers can specialize in areas of interest
- Once it's developed a knowledge base can be adapted and used in many other situations.
- Could reduce staffing costs as the expert system may take up the position of a staff member.
- The machine learning element of the expert system may allow for local factors to be considered / learn local dialects or speech patterns.

Will not be beneficial

- It may be expensive to develop the expert system, so it may not be cost effective.
- The knowledge base may become outdated as laws may change / may be too expensive to continually update it.
- The expert system may not cover the range of possibilities that exist and cases may need to be discussed with SLF to determine whether a lawyer is needed.
- Will SLF dismiss/not need lower level employees, so there may be no way for a lawyer to gather experience of handling more straight forward cases.
- If the expert system gives poor advice it may lead to a reputational risk for SLF.

Please see generic markband on page 24.

5. Recruiting new staff for *TS Employment*

(a) (i) Identify **two** characteristics of an algorithm. **[2]**

Answers may include:
- Set of rules
- Defines a sequence of operations
- Definiteness – clear, well-defined steps
- Effectiveness – steps are simple, defined time
- Finiteness – finite number of steps
- Independent – step-by-step, runs alone

*Award **[1]** for identifying correct statement about an algorithm up to **[2]**.*

(ii) Identify **two** types of feasibility study that the software developers might use in the development of this software. **[2]**

Answers may include:
- Technological
- Legal
- Economic
- Market
- Environmental
- Safety

*Award **[1]** for identifying each type of feasibility study up to **[2]**.*

(iii) Identify **two** activities that may take place in the maintenance phase of the system development life cycle (SDLC). **[2]**

Answers may include:
- periodic evaluation of system
- repairing system
- updating software
- bug fixing
- security patches
- deployment of new feature(s).

*Award **[1]** for identifying each activity that may take place in the maintenance phase of the system development life cycle (SDLC) up to **[2]**.*

(b) (i) Concerns have been raised about information technology (IT) projects that are completed in a very short time.

Explain **one** reason why completing IT projects in a short time may lead to problems. **[3]**

Answers may include
- Working too quickly promotes mistakes / Not enough time to test the software
- This means that software will require many updates
- Which may prove costly in the long run

- Insufficient time to consult with the end users/Incomplete stakeholder analysis
- This means that both end users and other stakeholders may well be very dissatisfied with the end result
- So there may be lower sales / Or a need to revise the software

- Lack of strong code review (checking that it is understandable, follows guidelines, can be tested/debugged
- Will result in code that may not be testable
- So errors will arise that need to be fixed.

Note: Candidates may develop ideas from more than one cluster. Marks can only be awarded when the original point is developed.

*Award **[1]** for identifying a reason why completing IT projects in a short time may lead to problems and **[1]** for each subsequent development up to **[3]**.*

(ii) Explain why the software developers have chosen the agile (scrum) development methodology for this project. **[3]**

Answers may include:
- Follows an incremental approach. Developers start off with a simplistic project design, and then begin to work on small modules
- allows for changes to be made after the initial planning
- it is easier to add features that will keep the project up to date with the latest developments in the area
- At the end of each sprint project priorities are evaluated. this allows clients to add their feedback.
- The testing at the end of each sprint ensures that the bugs are caught and taken care of in the development cycle.

*Award **[1]** for identifying a reason why developers have chosen Agile (scrum) development for this project and **[1]** for each subsequent development up to **[3]**.*

(c) Two additional processes have been proposed during the development of the artificial intelligence (AI) software. They are:

1. Involving end users at all stages of the project.
2. Checking that the data being input into the system is not biased.

Discuss whether these two processes should be included in the development of the AI software. **[8]**

Answers may include:

Advantages of involving end users at all stages of the project

- This will ensure that the final version of the software will be optimised for end users
- Involvement of end users will assist the developers in developing the questions and/or algorithms used in the software
- Involvement will lead to greater transparency in the process and this may give potential users confidence that the software is ethical / does not have hidden aims.

Disadvantages of involving end users at all stages of the project

- Will slow the process as it may require end-user sign off at each stage of the development process.
- There is no guarantee that the end users will be able to make sufficiently informed decisions about the usability of the software in its prototype stages.
- There is no guarantee the developers will be able to ask the right questions to elicit appropriate information from the end-users
- Could the end-users involved in the trial be considered accountable in any way if the IT does not functions as intended / Would end-users want to be involved if they believed they could be accountable?

Advantages of checking data input

- Data can be checked that it is representative, for example the sample data that is used to train the algorithms is representative of the wider population.
- This may lead to potential biases within the algorithms being spotted and reduced / removed prior to the software being launched.

Disadvantages of checking data input

- This may be a time-consuming process and considerably delay the development process
- Will the ‘correct’ data be available, or will there be enough of it?

Please see generic markband on page 24.

6. Autonomous tanks

(a) (i) Identify **two** methods of data collection that could be used for a stakeholder analysis during the development of the robots. **[2]**

Answers may include:
- Questionnaires
- Interviews
- Observation,
- Literature searches

*Award **[1]** for identifying each method of data collection that could be used for a stakeholder analysis during the development of the robot up to **[2]**.*

(ii) State **two** information technology (IT) personnel who would be involved in the development of the robots. **[2]**

Answers may include:
- IS manager (information system)
- Network manager
- Database administrator
- Programmer / software engineer
- Robot engineer /hardware engineer
- Project manager

*Award **[1]** for stating each member of IT personnel who would be involved in the development of the robot up to **[2]**.*

(iii) Identify **two** characteristics of an autonomous robot. **[2]**

Answers may include:
- Functions without direct human input
- Decisions/behaviour/actions controlled by algorithms
- Perception – interaction using sensors, camera, LIDAR **
- Actuation – motor for movement

Do not accept single words such as sensor or camera, must be in context

*Award **[1]** for identifying correct statement about autonomous up to **[2]**.*

(b) (i) Multiple stakeholders will be affected by this project.

Explain why a stakeholder analysis will lead to better project outcomes. **[3]**

Answers may include:
- Provides multiple perspectives
- Enables all the information necessary for the project to be gathered
- Which should lead to the needs of the various stakeholders being discussed/met etc / which may lead to the product working for a wider range of end-users
- Better understanding of current systems.

*Award **[1]** for identifying a reason* why a stakeholder analysis will lead to better project outcomes *and **[1]** for each subsequent development up to **[3]**.*

(ii) Explain why user acceptance testing is a critical part of the development of the robots. **[3]**

Answers may include:
- Allows the developers to see how the product will function when used by end users
- Which may be different from what is carried out in alpha testing
- Which gives a greater likelihood that the product will function as intended when used in real situations / can the users work with the robot
- May prevent extra costs in repairing the software when it fails in the field.

*Award **[1]** for identifying a reason why user acceptance testing is a critical part of the development of the robot and **[1]** for each subsequent development up to **[3]**.*

(c) There have been concerns raised about the use of autonomous robots in war.

Discuss whether it is acceptable to use autonomous robots in war. **[8]**

Answers may include:

Acceptable:
- Robots can make decisions very quickly in dangerous situations.
- Robots save lives because they replace soldiers
- Decisions made by robots are not affected by emotions or stress
- Robots can operate where communication is poor
- Increasing accuracy in targeting saves lives
- Could act as a deterrent
- Many nations are working on this, being without could be dangerous

Not acceptable:
- Who should be held responsible/accountable for a mistake? To what extent?
- Machines can't replace human logic'
- Machines can't make decisions based on the rules of war because they are too complex.
- Machines cannot adjust to slight differences in the situation
- What happens if you lose contact with the machine?
- Is there a difference between targeting people vs. ships or planes
- Danger on unintended consequences
- Machines are vulnerable to hacking

Please see generic markband on page 24.

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, conclusions or future strategies.* • *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, judgments or future strategies that are no more than unsubstantiated statements. The analysis underpinning them may also be partial or unbalanced.*
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.*
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, judgments or future strategies that are well supported and underpinned by a balanced analysis.*