Markscheme

May 2022

Information technology in a global society

Higher level

Paper 3

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.

1.   (a)   Define the term *net neutrality*.   **[2]**

Note to examiners:
*Net neutrality can be approach from the perspective of the internet service provider (ISP) **or** the consumer. Either approach is acceptable.*

Answers may include:
Based on the internet service provider (ISP)
- Internet service providers should enable open equal access to all content and applications on the Internet regardless of the source.
- Internet service providers should not favour or block particular products or websites.
- Internet service providers should not make agreements with any companies to give them improved network speeds or preferential access.
  - Internet service providers should not charge users different rates based on content, website, platform, application, type of equipment, source address, destination address, or method of communication.

Based on the Consumer:
- Consumers have equal access to all content and applications on the Internet.
- Consumers should not pay different rates for content, or websites accessed.
- Consumers should have access irrespective of device, application or platform used.
- The principle is that consumers can control what they see and do online, not the service provider.

Note to examiners:
Do not award a mark for stating "network neutrality" or "internet neutrality" i.e. the full version of the term.

*Award **[1]** for a partial definition and **[1]** for a full definition up to a maximum of **[2]**.*

(b)   Identify **two** behavioural characteristics that would indicate a person is
       addicted to social media.   **[2]**

       Answers may include:
       - Excessive use of social media compared to other activities – in the short or
         long term.
       - Mood change when not using social media.
       - Making social media the first activity in the morning.
       - Mood change when attempting to stop social media usage.
       - Use of social media is prioritised over all other activities.
       - Potential health effects of overuse e.g., lack of sleep.
       - Using social media for increasing amounts of time.
       - Unsuccessful efforts to stop using social media.
       - Constant checking of phone or device.
       - Staying on social media longer than intended.
       - Lying about social media use.
       - Withdrawal/isolation – spending more time away from family and friends.
       - Accepting there is a problem which involves participating in a social media
         detoxification program.
       - Relapsing after attempting to withdraw from social media use.
       - Short attention span and inability to concentrate.
       - Fear Of Missing Out / FOMO.

       Note to Examiners:
       Accept or award any other behavioral traits that are symptomatic of an
       addiction to social media

       Award [1] for identifying each behavioural characteristic that would indicate
       that a person is addicted to social media up to [2].

2.   (a)   Explain how the process of targeted advertising on social media works.   **[4]**

Answers may include:
Gather information
- When people use a device companies gather information about their online activity.
- Users can accept cookies that store their data and behavioural information.
- The information gathered can be based on their interests, gender, age, location, marital status etc.
- The information gathered can be based on their behaviour and level of interaction with the apps e.g., which videos are watched, which posts are liked etc.
- The information gathered may be purchased by companies that aggregate it.
- The aggregated information enables a profile of the person's lifestyle and interests to be constructed.

Target adverts
- Adverts are developed to appeal to the user's profile.
- Companies match adverts to the user's profile.
- Adverts are displayed on the social media apps on their mobiles and other devices based on their profiles.
- Adverts may be placed on the social media feed depending on:
  - time – when the user's profile indicate that they are participating in their various lifestyle and online activities.
  - location - adverts may offer location-specific deals based on a consumer's whereabouts
  - socio-demographic criteria – i.e., age, gender, political preferences, and nationality.
- Advertisers will pay a fee to the social media company to show their adverts.

Note to examiners:
*If only the gather information **OR** the target adverts are addressed **[3 max]**.*

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 indicates a basic understanding of how how the process of targeted advertising on social media works. Uses little or no appropriate ITGS terminology.
3–4	An explanation of how how the process of targeted advertising on social media works. There is appropriate ITGS terminology throughout the response.

(b)   Hugo often uses his favourite social media website username to register and
       login to other online services.

       Explain **one** benefit for Hugo of using single sign-on to access a range of
       online services.   **[2]**

       Answers may include:
       - Faster registration:
         - The use of social logins can make the registration or subscription
           process easier, and therefore faster.
         - No need to remember passwords and login details.
         - Once logged in, it is possible to access multiple websites in one log on.

       - One login less to remember:
         - With multiple accounts, it's difficult for people to remember all of their
           login information. When they use a social login, they do not have to
           remember a number of logins.
         - Also, less need to request a new password or to be sent (emailed) login
           name.
         - Easier to access infrequently visited websites.

       - Multiple identities:
         - Users can logon to websites with multiple social identities.
         - So, they have more control over their online identity.

       - Personalized experiences:
         - Because online services have more detailed visitor data available from
           the single sign-on service provider.
         - The user experiences can be more personalized.

       - Possible less failed logins:
         - When users don't have to remember usernames and passwords, there
           will possibly be less failed logins.
         - On the condition that they still know which social login they've used.

       - Easy for mobile registrations and logins:
         - It is often not easy to login on a smartphone.
         - A social login can be an easy solution for smartphone-users.

       - More secure:
         - Less chance of being caught with a phishing email as do not need to
           remember login details and the single-sign-on does not work with
           phishing emails.
         - Reduce risks of using one password for all logins / Reduce need to
           think of different passwords, which would then need to be remembered
           or put into a password manager in the browser or elsewhere.

       *Award **[1]** for **identifying** one benefit of using single sign on platform to login
       to access other online sites and **[1]** for a **development of the benefit** up to
       [2].*

3. Jaime's school has been monitoring the effects of the use of social media on student wellbeing. The school's management team is considering restricting the use of social media during school hours.

Evaluate this proposal. **[8]**

Answers may include:
For restricting the use of social media during school hours:
- Students need help to learn how to handle social media themselves.
- Students have difficulty in controlling their desires and urges to constantly check their social media.
- Social media is a distraction to work in class.
- Social media communications in school can lead to bullying and harassment.
- Social media can be a basis for "popularity contests" (number of likes, who is messaged, speed of response, gossip/fake news, *etc*).
- Helps to prevent a digital divide/competition between students for "best" phone and best social media apps.
- Families may have different needs/rules with families, and this can provoke a "divide" between students/families - student needs to explain what the need is for each family.

Against restricting the use of social media during school hours:
- Most students are responsible and can control their use of social media.
- Students may need to contact home/family or be contacted.
- Easier than phone call to school and school finding the student with message from home.
- Students need to learn how to use social media responsibly.
- Students use it for research and sharing information in class.
- Families may have a need to be able to contact each other during class time – travel, medical needs, parents work a lot and student needs to be able to access parents for arrangements, other caregivers such as neighbours may need to contact students.
- Students use social media outside school and most of the "bad" usually happens then not in school.
- Students may feel that they are not trusted.

Note to examiners:
For a competent response and above – the context of the response should be firmly placed in a school e.g., reference to the class, Jamie's school, teachers and students.
The conclusion should include the final evaluation that is based on the arguments made and may include a recommendation which may be based on a total ban, restrictions during certain times or no ban etc.

Please see markband on page 9.

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 to the information in the case study or independent research 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 information in the case study or independent research 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 information in the case study or independent research 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 information in the case study or independent research throughout the response.

4. Daniela's digital footprint includes all traces of her online activity from commenting on news pieces, posting on social media and promoting her work.

To what extent is it Daniela's responsibility to manage her digital footprint? **[12]**

Some students may interpret the question as, "To what extent does Daniela **need** to manage her digital footprint?" This can be accepted as a legitimate interpretation where candidates write about the positive and negative reasons for managing or not managing. But this should be used to recommend some management action/s in the conclusion where the question about responsibility needs to be answered.

The use of responsibility forces students to bring other stakeholders directly into the discussion, *i.e.* social media companies and authorities, rather than a more simplistic approach based on Daniela's needs alone. If it is not Daniela's responsibility the candidate needs to specify whose it is from the other stakeholders included. A needs-only interpretation will limit the ability of the student to reach a conclusion.

It **is** Daniela's responsibility or Daniela needs to because:
- Daniela is responsible for any item or comment that she posts on social media as she decided to post it. Hence, she is responsible for any impact they have on others or herself.
- Daniela is responsible for her privacy as she is the one that will have her identity or reputation damaged by her digital footprint.
- Companies include privacy settings in their apps, and it is Daniela's responsibility to know about them and to use them appropriately.
- It is Daniela's responsibility to educate herself about the means to protect herself and her footprint where she can, *e.g.* privacy settings and be aware of the comments and posts she puts up that may have negative impacts on herself and others.
- It is also Daniela's responsibility to be aware of the trade-off between free use of social media and the need for the social media companies to use her data to provide income for them to continue.
- It is Daniela's responsibility to understand that any data and information on the Internet may last for years and may not be able to be deleted.
- Responsibility to ensure positive benefits from her digital footprint: Daniela's digital footprint may provide information that could result in her being accepted for a position in a company, in a course, or people contacting her since she has displayed qualities that they might want, *e.g.* musical talents and experience.
- Daniela should be aware of being misunderstood from postings on social media and be prepared to manage these by deleting or modifying them.
- Daniela is responsible for ensuring that her reputation maintained from her use of social media
- Daniela is responsible for her active digital footprint.

It is **not** Daniela's responsibility because: (these points need to include who should be responsible and why for completeness)

- Rights of a social media user to feel safe hence the responsibility lies with the social media companies to provide a safe environment in social media, especially with having her private information protected.
- It is the duty of social media companies to tell Daniela and other users of the way the data of their digital footprint will be used and secured.
- Duty of social media companies to protect user data they collect, often unknowingly to the user.
- It is not fully Daniela's responsibility as she does not have the technical understanding and knowledge to manage it; and unrealistic to expect her to be technically capable.
- Social media companies are responsible for how passive digital footprints are being used.
- It is difficult for Daniela to control/be responsible for what others post e.g. tag, share.
- Duty of social media companies to follow the privacy principles that nations use to frame laws about data and privacy.
- It is the responsibility of the social media company as they have the technical understanding and knowledge to manage her footprint – security and privacy.
- It is the responsibility of the government to legislate laws that punish social media companies for not protecting Daniela's footprint as she often cannot protect herself for a variety of reasons.
- Daniela should have the democratic right to express her opinion about public issues and the companies and governments should protect this.
- It is the role of governments to legislate right-to-be-forgotten laws and for social media companies to provide means of implementing them easily and across all nations and platforms.

Please see markband on page 12.

HL paper 3 question 4 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 1–3 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. • No reference is made to the information in the case study or independent research in the response. • The response may be no more than a list.
Adequate 4–6 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. • Implicit references are made to the information in the case study or independent research in the response.
Competent 7–9 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 information in the case study or independent research are made at places in the response.
Proficient 10–12 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. • Explicit references are made appropriately to the information in the case study and independent research throughout the response.