Name: _____

IAL IT Topic 6 Mark Scheme

Date:

Time:

Total marks available:

Total marks achieved: _____

<u>Mark Scheme</u>

Q1.

Question number	Answer	Additional guidance	Mark
i	Award up to a maximum of two marks for a linked explanation such as: • uses less paper/order pads (1) so reduces landfill / less waste/ saves trees (1) • reducing printing/distribution of pads (1) so reduces CO2 emissions/reduces global warming (1) • better stock control means that there's less wastage (1) since fewer flowers are wasted/less transport required/less water used (1)		2
ii	Award up to a maximum of two marks for a linked explanation such as: • IT system uses (more) electricity (1) electricity generation has an environmental cost (1) eg greenhouse gases, CO2, land use for power generation, mining • IT system uses (more) devices/electronics/computing equipment (1) devices have an environmental impact during manufacture/disposal (1) eg radioactivity, heavy metals, landfill, toxic materials		2

Q2.

Question number	Answer	Additional guidance	Mark
i	The only correct answer is B, because USB C has a bandwidth of up to 20Gbps A is not correct because Bluetooth has a bandwidth of around 1Mbps C is not correct because Ethernet has a bandwidth of up to 10Gbps D is not correct because Micro USB has a bandwidth of up to 5Gbps		1
ii	Award up to two marks for a linked explanation such as: • The tablet has GPS (enabled) (1) so it can match its location to the known location of the premises (1) • The tablet has Wi-Fi (enabled) (1) so when it sees the company's Wi-Fi signal/SSID it 'knows' where it is (1)		2

Q3.

Question number	Indicative Content	Mark

	Responses should be in relationship to the context, advantages and disadvantages to Sanjeev of the digital footprints that he has generated.
	
	Active footprint (generated when Sanjeev deliberately releases / shares personal data, e.g. on social media).
	
	Advantages:
	• editors can more easily find Sanjeev to
	    ○ offer work
	    ○ see examples of his writing
	    ○ see what styles, genres etc. he can write in
	• helps protect Sanjeev from:
	    ○ fraudulent activity
	    ○ plagiarism / claims of plagiarism
	    ○ other legal issues such as copyright
	• allows companies to personalise Sanjeev's visits to their sites, for e.g. special offers, suggested products.
	
	Disadvantages:
	• adverts / offers may be based on Sanjeev's research and not be wanted for his everyday life
	• personal data can be monetised without Sanjeev's knowledge / permission
	• companies may 'personalise' by increasing prices based on a perception of Sanjeev's wealth / status
	• analysis of an active footprint can reveal more information than Sanjeev had intended to share
	• privacy problems
		12

Passive footprint (generated when Sanjeev visits sites, performs transactions.
e.g. cookies, logfiles).

Advantages:
- enhanced experience, e.g. search fill, location awareness
- helps protect Sanjeev from:
    - credit card fraud
    - attempts to log in to his accounts, e.g. email, shopping

Disadvantages:
- privacy problems
- no control over what is collected
- information may end up in wrong hands, e.g. credit card numbers, account numbers
- embarrassing / inconvenient material may be collected
- may impact on non-internet activities. Footprint may be used by companies dealing with e.g. credit references, rental agreements.

Managing the footprints going forward:
- keep personal / work accounts separate / separate accounts for different functions
- don't use same user names for multiple accounts / set up multiple profiles
- security measures / clearing cookies / browser add ons to prevent tracking
- deliberate management of active footprint(s) to suit Sanjeev's purposes
- use of anonymous / private browsing / secure browser (add ons)

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–4	• Demonstrates limited knowledge and understanding, some of which may be inaccurate. • Applies understanding with limited coherence to produce a response that lacks development. • Demonstrates limited awareness of competing arguments. • Conclusion, if present, is generic or unsupported.
Level 2	5–8	• Demonstrates knowledge and understanding, which is mostly relevant and may include some inaccuracies. • Applies understanding to make some coherent connections and a partially developed response. • Demonstrates some awareness of competing arguments, but this may be unbalanced, and partially supports conclusion with evidence.
Level 3	9–12	• Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a fully developed response. • Demonstrates an awareness of competing arguments and supports conclusion with evidence.

Q4.

Question number	Indicative content	Mark
	Responses should be in relationship to the context, use of location awareness on a smartphone. **Technologies** • GPS • cell tower triangulation • Wifi access point triangulation • offline methods such as digital maps with user selection of location. **Advantages to the user of allowing location awareness in the app.** • app can tell user where they are • suggestions may include places that are not immediately visible/obvious to a tourist • app may suggest 'similar places' when a location is visited • app may include useful contact details, opening times, etc. • app may include booking/reservations/discount codes feature **Privacy problems due to the technology** • app sends the location to a central/company server • location can be tied to smartphone ID/international mobile subscriber identity (IMSI) • location logs could be used to track a smartphone and, by implication, its owner • information could be sold to advertisers/third parties • information could be stolen/hacked by third parties • information could be taken/subpoenaed by government.	12

| | **Ethical and moral implications. May be given in terms of data protection laws.**
• privacy, ethical issue of tracking people without their consent/knowledge or any legal obligations/redress
• data harvesting, ethical issue of mass collection of data, even if anonymised, for e.g. advertising
• using location to make judgements about the user, moral issue. e.g. determining that a user is near a bar or adult entertainment venue could result in a decision to serve adult themed adverts
• ethical and/or moral issues about how much users are told about privacy implications and what settings/options the app may have to give users control

• Legal issue, not asked for but may be mentioned. App user may be a minor and unable to give legal consent to data collection/tracking.

Conclusion
Might include:
• an assessment of which method
    ◦ is least intrusive
    ◦ produces/stores least data about the user
• suggestions for improving privacy/user control of the app
• ideas about striking a balance between usability and privacy/data protection
• ideas about whether the pressure group has a valid point | |

Level	Mark	Descriptor
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Level 3	9–12	• Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a fully developed response. • Demonstrates an awareness of competing arguments and supports conclusion with evidence.

Q5.

Question number	Answer	Additional Guidance	Mark
i	Award **two** marks for a linked explanation such as: • road safety (1) seeing defective/overloaded vehicles / seeing dangerous manoeuvres such as cutting corner when turning • crime reduction (1) tracking stolen/unlicensed vehicles (1) • traffic management/planning/statistics (1) recording types and volumes of traffic / need to know peak periods/volumes (1) • environmental concerns (1) need to need to know peak periods/volumes/vehicle types (1) • law enforcement (1) surveillance/intelligence gathering / deterrence (1)	Accept reasonable alternatives Not catching speeding, given in 6a	2

Question number	Answer	Additional Guidance	Mark
ii	Award **one** mark for each point up to a maximum of **two** marks for a linked description. • privacy concerns / civil liberties violations / state surveillance (1) • tracking movements of vehicles / people/owners/ drivers (1) • allowing (government) intrusion into private life (1) • risk of data theft from government database (1) • government might sell/pass on data without authorisation (1) Examples: • government could use the system to track the movement of innocent people (1) and therefore intrude on their right to privacy (1) • government could create a profile of its citizens movements (1) for political purposes (1)		2

Q6.

Question number	Answer	Additional Guidance	Mark
i	Describe what is meant by personal data. Award one mark for each point to a maximum of **two** marks for a linked description: • information/data that relates to an individual/person (1) • unique to person/would allow them to be identified (1) • by several separate items of information being combined (1)	Allow examples for MP1	2

Question number	Answer	Additional Guidance	Mark
ii	Give **one** way in which a member could protect their account from unauthorised access. Award **one** mark for any password related measure such as: • use a (strong) password (1) • use a password manager (1) • keep their password securely/secret (1) • use two-factor authentication (1) • log off after visiting (when using public computer) (1)	Allow any sensible, password related measure.	1
iii	Explain **one** way that the people who run the online community could protect members' data from unauthorised access. Award one mark for each point to a maximum of **two** marks for a linked explanation such as: • encrypt the data/files (1) and use secure sockets layer (SSL) /encrypt the link to the (users) browser / so that hackers can't decode the data (1) • install/use a (web application) firewall (1) to protect the data/files/application server / prevent external/internet attacks (1) • use a Turing test/method of detecting bots (1) to recognise/reject non-human/automated input (1) • two-factor authentication/biometrics could be used (1) to ensure that only authorised users can access the data/files (1) • prevent SQL injection (1) by formatting/checking input fields / checking for unexpected/malicious input (1)		2

Q7.

Question number	Answer	Mark
	Award **one** mark any of the following up to a maximum of **two** marks. • Slow access speeds (1) • Poor literacy (1) • Poor digital skills (1) • Physical/mental disabilities (1) • Financial barriers (1) • Lack of internet access (1) • Lack of trust in the service (security scares) (1)	2

Q8.

Question number	Answer	Mark

	Responses should be in relationship to the context, advantages and disadvantages of a reuse and recycle approach.
	Accept reverse arguments for the shred and smelt approach.
	
	Environmental considerations
	    Advantages:
	    • less pollution from:
	        ◦ burning off plastics, etc.
	        ◦ smelting waste
	        ◦ waste / toxic gases
	        ◦ heavy metals
	        ◦ mining of materials
	        ◦ manufacture processes
	
	    Disadvantages:
	    • remaining material may be most polluting / difficult to dispose of
	    • reused items are often less (energy) efficient than newer ones
	    • smelted metals are available for new manufacturing, less mining etc. needed for new items
	    • increased logistics increase transport pollution
		12

	Economic considerations
	    Advantages:
	    • new revenue sources such as:
	        ◦ resale of working / repaired items
	        ◦ sale of spares
	        ◦ sale of consumables such as toner, paper
	        ◦ use / reuse of items within the company
	
	    Disadvantages:
	    • increased start-up costs, company will need to invest in new facilities and logistics chains
	    • costs of compliance reporting, asset tracking, other documentation
	
	Security implications
	Advantages:
	    • few to none, shredding and smelting will destroy any data left on the IT equipment.
	
	    Disadvantages:
	    • legal obligations, e.g. data protection laws
	    • customer relations, need to secure-delete data
	
	Conclusion
	There is no preferred answer, candidates should support their conclusion with arguments made.	

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Level 2	5–8	• Demonstrates knowledge and understanding, which is mostly relevant and may include some inaccuracies. • Applies understanding to make some coherent connections and a partially developed response. • Demonstrates some awareness of competing arguments, but this may be unbalanced, and partially supports conclusion with evidence.
Level 3	9–12	• Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a fully developed response. • Demonstrates an awareness of competing arguments and supports conclusion with evidence.

Q9.

Question number	Indicative content	Mark

	Responses should be in relationship to the context; use of information technology could have a positive impact on environmental monitoring and efficient use of resources.
	
	Environmental monitoring
	• Water
	  ◦ quality, acidity (pH), colour, dissolved oxygen, turbidity
	  ◦ volume/flow, reservoir level, aquifer level, rainfall, metering
	  ◦ waste, quality before and after treatment
	  ◦ annual/seasonal cycles
	
	• Temperature
	  ◦ inside and outside temperatures
	  ◦ heat island effects of new resort
	  ◦ energy requirements for heating/cooling
	  ◦ monitoring architectural effects
	
	• Air quality
	  ◦ CO_2, NOX, particulates, traffic effects, emissions from new resort
	
	• Fishery
	  ◦ quality of seawater, temperature, salinity, pollution (e.g. sewage, run off from new paved areas)
	  ◦ fish stocks
		12

Efficient use of resources
- Water
  - desalination using solar
  - reservoirs and water capture systems
  - recycling and reuse
  - conservation systems

- Solar
  - photoelectric generation, metering, control systems, storage
  - thermal for e.g. heating water

- Recycling
  - heat, waste, water. Measuring quantities, monitoring systems

Conclusion
Might include:
- positive impact on environmental monitoring
- efficient use of resources
- awareness/use of competing arguments
- comment on the government's claim that smart features will prevent any environmental damage

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	0	No rewardable material.
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Level 3	9–12	• Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a fully developed response. • Demonstrates an awareness of competing arguments and supports conclusion with evidence.

Q10.

Question number	Answer	Additional Guidance	Mark
i	Award up to **two** marks for each of **two** descriptions such as: • voice guide / on-screen reader (1) which will read on-screen text / give information about current channel / programme (1) • audio description (1) which provides a description of the scene/setting (1) • high contrast (1) which applies high contrast to all menus, control panels, etc. (1) • change brightness / screen temperature (1) to allow more comfortable viewing / relieve eye strain (1) • colour blindness mode / ability to change colours (1) to allow colour blind people to see what is on the TV (menus, etc.) (1) • screen zoom/enlarge (1) allowing people to zoom in to important parts of the screen / enlarge menus, etc. (1) • guide dots / markings on the (remote) controls (1) to enable people to operate it without seeing the buttons (1) • voice activated TV controls (1) to enable people to operate the TV without seeing the controls. (1)	Do not accept helping visual impairment as an extension	4

Question number	Answer	Additional Guidance	Mark
ii	Award up to **three** marks for a linked explanation such as: Want to create an inclusive/non-discriminating society where anybody can access the digital devices (1) there are official standards/guidelines that manufacturers must follow (1) which have legal/reputation penalties if not followed (1) OR Making devices easier to use for people with disabilities will increase the size of the market (1) OR Customer pressure to include people with disabilities (1) company responds to keep customers satisfied (1)	Do not allow making more profit arguments	3