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MARKSCHEME

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INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Higher and Standard Level

Paper 1

11 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 the case of a "describe" question, which asks for a certain number of facts *e.g.* "describe two kinds", mark the **first two** correct answers. This could include two descriptions, one description and one identification, or two identifications.

1.   (a)   **Identify *two* ways in which this personal computer can communicate with other devices.**   *[2 marks]*

- USB/USB ports
- card reader
- Ethernet / network card
- wireless.

*Do **not** accept Bluetooth as it is not given in this computer's specification.*

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

(b) **A travelling businessman has decided to take a sub-notebook PC with him when he is away from the office, instead of a normal laptop. Describe** *two* **disadvantages of this decision.** *[4 marks]*

disadvantage
• no CD drive
reason
• may need to read files supplied on CD.

disadvantage
• the RAM is small
reason
• may prevent the running of some programs.

disadvantage
• backing storage/flash memory is quite small
reason
• this may limit the storage of useful files.

disadvantage
• the keyboard is small
reason
• this makes typing difficult/slow.

disadvantage
• the battery life might be too limited
reason
• this reduces the useful time he can spend on it.

disadvantage
• the screen is small
reason
• this makes it difficult to read.

disadvantage
• this one runs open source software
reason
• this may not be compatible with other systems that he needs to connect with.

Award [1 mark] for each disadvantage identified up to a maximum of [2 marks]. Award an additional [1 mark] for the development of that disadvantage up to a maximum of [2 marks]. Mark the first two correct disadvantages identified.

(c) **Many consumers are now purchasing personal computers with open source software rather than commercial software installed. Explain reasons for this trend.** *[4 marks]*

- it is free
- it is customisable/source code is accessible
- it often occupies less memory/backing storage than similar commercial products
- no need to register/keep track of licenses
- functionality is the same as the more expensive software
- updates and security more frequent
- may run faster
- better security
- less prone to viruses.

[1 mark]
A limited response that indicates very little understanding of the topic.

[2–3 marks]
A description, although the response may lack appropriate development at the bottom end of the band.

[4 marks]
A clear, detailed explanation of the issue with reasons.

2.   **(a)**   **Define the term *bit-map image*.**   *[2 marks]*

- a type of memory organization
- a means of storing pictures (images)
- image is made up of dots/pixels
- may require a lot of storage
- minimum of 1 bit per pixel
- often more bits used to store colour information
- resolution depends on the density of pixels
- image file format/can be opened with common image software.

*Do **not** accept digital as it is not specific to bit maps.*

Award [1 mark] for any of the above points in a definition up to a maximum of [2 marks]. For example, the response: "A bit-map image is a type of memory organization or means of storing digital images", would be awarded [2 marks].

(b)   **Describe the steps that may be taken in authenticating an examiner when logging on to the examining organization's IT system.**   *[4 marks]*

- check against list of examiners
- login details checked remotely
- does examiner ID exist?
- does examiner ID and password match the database?
- if yes, then access granted
- count the number of attempts
- lock account if more failed attempts than permitted.

Only allow answers that refer to authentication actions taken by the system, not the initial actions of the user.

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

(c)   **Examiners are trained in the use of the new software with an online training package.   Explain *one* advantage and *one* disadvantage of using online training for this purpose.**   *[4 marks]*

advantages
- cheap to implement
- flexible/time and place can suit the individual
- users trained to the same standard
- can deliver quickly
- easy to update
- can check progress.

disadvantages
- examiners may not be motivated
- examiners may have difficulty in using the package
- examiners may find it difficult to get help with the package.

Award [1 mark] for one advantage identified and [1 mark] for it explained up to a maximum of [2 marks].

Award [1 mark] for one disadvantage identified and [1 mark] for it explained up to a maximum of [2 marks].

3. **(a)** **Define the term** *information system.* *[2 marks]*

"An information system is a collection of people, information technologies, data, methods and policies organized to accomplish specific functions and solve specific problems." (ITGS Guide, page 3)

*Do **not** allow the word "information" because it is in the term itself.*

- hardware
- software
- data
- methods
- policies
- accomplishes specific functions
- solves specific problems.

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

(b) **Describe how the information system is able to provide an up-to-date display such as the one in the image on the previous page.** *[4 marks]*

- bus schedule is stored in a database
- match the bus to the schedule database
- each bus has a unique identifier which is stored in a database
- works in real-time
- stores locations of all the buses on the route
- location tracked at all times
- or using GPS/RFID/sensors/transponders
- knows the ID of each bus
- map also stored
- location of bus stops stored
- system calculates distance of bus from stop
- calculates expected arrival time
- based on typical journey times.

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

(c) **Explain ways in which the information system could be used to improve the efficiency of the bus service.** *[4 marks]*

- store data about bus journey times
- store timetable
- compare actual performance with timetable expectations
- calculate performance figures
- for each route
- different days/times
- adjust timetable if necessary
- re-route buses in real-time if delayed
- use data for future planning of timetables/routes.

*Do **not** accept any answers that refer to communication with the passengers instead of how the service can be improved.*

[1 mark]
A limited response that indicates very little understanding of the topic.

[2–3 marks]
A description, although the response may lack appropriate development at the bottom end of the band.

[4 marks]
A clear, detailed explanation of the issue with reasons.

4.   **(a)**   **The value in cell B9 was calculated using the SUM function. Identify** *two*
features of a spreadsheet function.   *[2 marks]*

- a set of formulae/relationships/rules
- has a name
- produces a single output
- contains ( ).

*Do **not** award a mark for the equals sign.*

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

(b)   **Describe the steps taken to produce the chart in the spreadsheet on the**
previous page.   *[4 marks]*

*Do **not** award a mark for references to entering the data.*

- select the data
- from A4 to D8 (or refer by content)
- select chart wizard or equivalent
- select "add chart to this sheet"
- select chart type
- accept/select legend
- label axes
- select units
- add title.

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

(c) **Many companies allow individuals to create their own macros to carry out standard tasks. Explain *one* advantage and *one* disadvantage of the use of macros.** *[4 marks]*

advantages
- automates tasks
- allows common tasks to be carried out quickly
- standardizes tasks
- consistent results
- house style complied with
- more productive.

disadvantages
- may be badly designed
- not produced by expert
- may produce errors
- may be badly documented
- difficult to maintain
- can produce macro viruses.

Award [1 mark] for one advantage identified and [1 mark] for it explained up to a maximum of [2 marks].

Award [1 mark] for one disadvantage identified and [1 mark] for it explained up to a maximum of [2 marks].