GradeMax

Cambridge Assessment International Education

Cambridge IGCSE™

INFORMATION & COMMUNICATION TECHNOLOGY **0417/12**

Paper 1 Theory **October/November 2022**

MARK SCHEME

Maximum Mark: 100

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2022 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

© UCLES 2022

[Turn over

GradeMax

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

© UCLES 2022

GradeMax

Question	Answer	Marks
1(a)	Landscape	**1**
1(b)	Bullet	**1**
1(c)	Hanging	**1**
1(d)	Widow	**1**

Question	Answer	Marks
2		**4**

	database (✓)	**presentation (✓)**	**spreadsheet (✓)**	**word processing (✓)**
Producing a letter to send out to patients				✓
Creating graphs to show numbers of people attending the medical centre			✓	
Creating queries from patient's details	✓			
Creating an interactive display of services offered		✓		

Question	Answer	Marks
3(a)	**Three** from: Quick to enter commands Easy to enter commands Do not have to learn commands Less errors as commands not typed Works with a touch screen Intuitive Easy to select options/tasks	**3**

© UCLES 2022

GradeMax

Question	Answer	Marks
3(b)	**Three** from: Connectivity – can connect using Wi-Fi/3G/4G/5G/Bluetooth/NFC Touch screen technology Camera Technology Responds to physical world using sensors GPS/Sat nav Audio technology Messaging technology	**3**

Question	Answer	Marks
4(a)	**Two** from: Password is too short Easy to guess Contains personal information Doesn't contain a mixture of uppercase, lowercase letters, numbers, and symbols Contains repeated letters	**2**
4(b)	**Two** from: Use drop-down lists Use biometric passwords Use one use tokens/OTP Use a device instead of a password	**2**

Question	Answer	Marks
5(a)	Max **three** from: Load the database software Set up tables Set up field names Set up primary/foreign key fields Set up relationships Set up the field types/properties/formatting/data types Set up the validation routines Set up input forms Set up queries/reports Type in/import records Create a test strategy/plan Max **three** from: Test using normal, abnormal, and extreme data If errors are found, make corrections Re-test the database structure Test with live data	**4**

© UCLES 2022

GradeMax

Question	Answer	Marks
5(b)	The old and new systems/both run side by side until the new system takes over **Benefit** **One** from: The old system can be used as a back up Staff can be trained gradually **Drawback** **One** from: More time consuming as the data needs to be entered into two systems More chance of error on data entry as two systems are being used More costly as there are two sets of staff Uses more power running two systems	**3**

Question	Answer	Marks
6	**Four** from: Fewer errors in final version of real item as errors would have been resolved in model Saves money as it saves on resources Safer to run a computer model rather than risking human life Different scenarios/what ifs can be carried out which may happen in real life/to experiment To build the bridge and test it would be impracticable due to cost/time	**4**

Question	Answer	Marks
7(a)	**Six** from: **Benefits** Membership details can be searched very quickly as there are many members Membership details can be quickly edited/updated The data in the database can be backed up easily Easier to create an archive of past members More secure with a valid reason Can be used as a source for mail merging Less errors as data does not have to be re-written Reduces the time as data does not have to be re-written **Drawbacks** Need IT skills to use the software/computer Need to have to additional equipment which is expensive Can take up a lot of storage space/memory in the computer Expensive to buy software Expensive to secure the system as it contains personal data Training staff on how to use the software will be time consuming Training could be expensive for the club **To gain full marks the description must have correct answers for both benefits and drawbacks**	**6**

© UCLES 2022

GradeMax

Question	Answer	Marks
7(b)	**Five** from: Adequate space for response//Individual character boxes Fonts/font size should be easy to read Instructions how to complete form Logical order of questions Questions spaced out Appropriate white space Questions should be clear and understandable	**5**

Question	Answer	Marks
8	**Eight** from: **Advantages** Readings are taken at a more consistent time interval The sensor reads the data more accurately Safer as humans do not need to take the measurements Computers can analyse the data continuously Readings taken more frequently Multiple variables can be monitored at the same time **Disadvantages** Sensors can malfunction due to the temperature If sensors malfunction this could lead to incorrect readings Sensors could be stolen **To gain full marks the discussion must have correct answers for both advantages and disadvantages**	**8**

Question	Answer	Marks
9(a)	**Three** from: Cloud consists of large groups of remote networked servers They allow centralised data storage Offsite data storage/servers owned by a third party Accessed from any internet compatible device Access from anywhere with an internet connection	**3**
9(b)	**Six** from: Loss of control of the data as the data is controlled by a data storage provider Data can be affected without the user knowing The data remains on the server for a long time therefore more chance of it being hacked Many copies of the data made therefore easier to compromise Users must use strong passwords/authentication methods as hackers have longer time to be able to crack the password If internet connection is lost, then the cloud cannot be accessed If internet connection is lost when data is saved, then data could be lost A subscription needs to be paid whereas an HDD is one fee Difficult to delete all copies of a file as it is in multiple locations	**6**

© UCLES 2022

GradeMax

Question	Answer	Marks
9(c)	**Eight** from: **Benefits** Faster way of accessing systems Cannot forget the biometric data Must be physically at the device to access it More secure as it uses unique data Difficult to copy/forge **Drawbacks** Invasion of privacy User may not know they have logged off Biometrics may change therefore data will need to be kept up to date Expensive method/technology to set up Environment can affect measurements Over usage can affect the measurements Difficult to reset once compromised Difficult to set up Time consuming to set up as measurements must be taken Facial coverings/changes can prevent system from working **To gain full marks the discussion must have correct answers for both benefits and drawbacks**	**8**

Question	Answer	Marks
10	**Six** from: **Advantages** Branches can stay open longer and offer other services More bank staff are available to help customers Less chance of hacking/fraud as system used in the banks Fewer bank tellers so more profitable for the bank As the service is quicker/more services more likely to remain **Disadvantages** Initial cost of hardware/software is expensive Need to retrain staff which can be expensive System maintenance costs will be expensive as more inexperienced people are using the system Staff numbers may increase as staff are needed to help internet banking customers **To gain full marks the discussion must have correct answers for both advantages and disadvantages**	**6**

© UCLES 2022

GradeMax

Question	Answer	Marks
11(a)	**Three** from: The sender only needs to type in the name of the group Saves time rather than typing out all the email addresses Less likely that an email address is omitted The sender does not have to remember individual email addresses Less likely to send the same email twice to one villager Less likely to send emails to the wrong people	**3**
11(b)	Data from sensor is in analogue form Computer only reads digital data Analogue to Digital Convertor	**3**
11(c)	**Six** from: Microprocessor reads the data from the ADC Microprocessor stores pre-set value Microprocessor compares current water level with preset value If the current water level is greater than the pre-set value … … the microprocessor sends a signal ... … to the DAC to convert data to analogue … signal sent to an actuator Actuator raises the flood barrier Continual process	**6**

Question	Answer	Marks
12	**One** mark for correct feature and **one** mark for correct associated reason **Feature: Windows** **Reasons:** See more than one task at a time Each task can be in a separate window To display the task **Feature: Icons** **Reasons:** Tasks can be recognised Click on an icon and it opens (a task/app) Easy/faster to open an app by clicking on it **Feature: Menus** **Reasons:** To choose all the available options **Feature: Pointers** **Reasons:** To select tasks/icons	**4**

© UCLES 2022

GradeMax

Question	Answer	Marks
13	Max **five** from: The use of computers has reduced the number of office staff Computers can help office staff to be more productive More employees are working from home due to the increase in technology Computers can cause less productivity due to distractions Workers could be working longer hours De-skilling of staff Increase in training for staff as they need to learn new skills Increase in the number of blue-collar workers/supervisors Increase in the number of maintenance staff/technicians Higher security issues due to networking Less people work in offices Max **two** marks: Increase in part time/job sharing/compressed hours/flexible working/working from home Computers have allowed staff to work part-time/compressed hours/job sharing/flexible working/working from home	**6**

Question	Answer	Marks
14(a)	**rtf** Text file with formatting/generic text files **pdf** Standard/generic image file	**2**
14(b)	**Three** from: pdf their layout and formatting stay the same, regardless of which device/operating system/application being used whereas rtf formatting can change pdf take up less memory for the same size of document pdf files are compressed pdf the formatting can be more complex whereas rtf has basic formatting pdf are harder to edit pdf generic image format rtf can be read by most word processing editors rtf is a generic text format	**3**

Question	Answer	Marks
15	**Two** from: Visual verification refers to the original document whereas proofreading does not need to refer to the original document Proofreading is checking spelling and grammar errors whereas visual verification does not check for errors Visual verification checks that the data has been copied correctly	**2**

© UCLES 2022