Cambridge IGCSE™

INFORMATION AND COMMUNICATION TECHNOLOGY   **0417/12**

Paper 1 Theory   **February/March 2023**

MARK SCHEME

IMPORTANT NOTICE

Mark Schemes have been issued on the basis of **one** copy per Assistant examiner and **two** copies per Team Leader.

<div style="border:1px solid black; text-align:center;">

Pre-standardisation

</div>

Question	Answer	Marks	Notes

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.

Question	Answer	Marks	Notes
	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.		
	Mark scheme abbreviations **/** separates alternative words / phrases within a marking point **//** separates alternative answers within a marking point **underline** actual word given must be used by candidate (grammatical variants accepted) **max** indicates the maximum number of marks that can be awarded **( )** the word / phrase in brackets is not required, but sets the context **Note:** No marks are awarded for using brand names of software packages or hardware.		

Question	Answer	Marks	Notes
1(a)	**One** from: Software are programs/apps for controlling the operation of a computer Software are programs/apps for processing of electronic data	1	Allow Programs/data
1(b)	Applications System	2	Allow Application/systems
2	**B** Laser printer	1	
3	**Three** from: Purpose of the system/program Limitations of the system Program listing Program language Program flowcharts/algorithms System flowchart Hardware and software requirements File structures List of variables Input format Output format Sample runs/test runs Validation routines	3	

Question	Answer	Marks	Notes
4(a)	**Three** from: Faster to find the information needed More relevant websites are at the top of the list The amount of information found is reduced making it easier to find relevant information Specialist search engines can be used to make information found more relevant	**3**	
4(b)	**Four** from: Block/report unwanted users Do not arrange to meet online users face to face Do not disclose personal data Do not post pictures in school uniform Do not post inappropriate images Do not use inappropriate language Respect people's confidentiality	**4**	There may be others

Question	Answer	Marks	Notes
5	**Six** from: Interactive user interface asks questions (about the route) The user answers the questions (with Yes/No answers) The towns and areas visited are typed into the (interactive) user interface Answers lead to other questions The inference engine searches The Knowledge base is searched... ...for suitable routes (between two points) The rules base is used Suggested routes and schedules are produced Displays the ways it achieved the solutions/conclusions/explanation system	**6**	

Question	Answer	Marks	Notes
6	**Two** from: Keyboard Headphones Printer Smartphone Refridgerator Oven Speaker Game controller Laptop **Any other reasonable answer**	**2**	Check answers at STM
7(a)	**Two** from: It is unique/different It cannot be a null value/empty It is used in (relational) databases	**2**	
7(b)	**Two** from: It enforces referential integrity It acts as a link between fields in different tables It is only present in relational databases It is a primary key in another table	**2**	

Question	Answer	Marks	Notes
8	**Four** from, for example: Can control the heating from your smartphone so that you come home to a warm house Smart TVs allow programs to be recorded remotely Smart TVs allow view on demand Money saving due to reduced utility bills as heating is only turned on when needed Smart fridges allow food to be automatically added to the food order Increased sense of security in the home due to monitoring the CCTV remotely The smart device send alerts to your phone/portable device	**4**	There will be others Full sentences only
9(a)	**One** from: Holds/to enter the content of the web page Create the structure of the web page	**1**	

Question	Answer	Marks	Notes
9(b)	Presentation/Styles **One** from: To display elements within the web page To format elements within the web page Contains the css/stylesheet Behaviour/scripting **One** from: For scripting language to control elements within the web page Contains the forms **Allow one mark for the layer and one mark for the corresponding use**	**4**	
10	**Three** from: Quicker to select options Smaller footprint as the computer system takes up less space Improved hand/eye coordination More ergonomic Greater reliability Ability to use pinch and zoom gestures	**3**	

Question	Answer	Marks	Notes
11(a)	**Two** from: Pop up messages can appear on the computer screen Fills the computer memory causing it to slow down Causes the computer to crash Deletes/corrupts files/programs Could access personal data	2	
11(b)	**Three** from: Use an up-to-date anti-virus software Regularly scan the computer for viruses Only open email attachments from people you trust Scan all portable storage media before downloading files/software Only download software from legitimate websites	3	
11(c)(i)	system file	1	Allow a type of system file by example, such as DLL, EXE

Question	Answer	Marks	Notes
11(c)(ii)	**Three** from: Load the anti-virus software Scan the computer for viruses If a virus is found Alerts the user that a file needs to be quarantined Allows the user to accept or reject the quarantining of the file The file is moved to a hidden directory (that the user does not have access to) Re scan the computer/file to check for further viruses	3	
12(a)	**Four** from: Sensible fonts (not fancy fonts) to make it easier to read Use of both upper and lower case characters (to make it easier to read) Use of technical language/not childish language Use of transitions Use of videos rather than text Use suitable images Attractive colours (not bright) Interesting content Balance of pictures and text Uncluttered (use white space) Use bullet points (easier to absorb information)	4	

Question	Answer	Marks	Notes
12(b)	**Two** from: Copyright is a type of intellectual property It gives the owner of the copyright the exclusive right to make copies of the work Allows recourse to law if copyright is broken It allows the owner to give permission for others to use the work	**2**	
13	**Two** from: Cheaper than buying the Blu-ray player Streaming does not require dedicated hardware whereas Blu-ray does Streaming works on different devices like computer, smartphone Streaming uses a simpler interface Quicker to see new releases as no need to wait for delivery	**2**	Allow a mark for a reasoned argument on cost ie streaming is cheaper

Question	Answer	Marks	Notes
14	**Four** from: **Similarity** Both are internal memory Both are primary storage Both store data Both are directly accessed by the CPU Both are solid state **Difference** RAM is used to store the current program/instruction RAM is volatile//read/write Data is lost when the power is turned off from RAM RAM is temporary memory ROM is read only memory/non-volatile ROM is permanent memory ROM stores the start up instructions Data stored by the manufacturer is stored in ROM **To gain full marks the comparison must have correct answers for both similarities and differences**	**4**	Allow RAM can be dynamic or static *Note to PE - Before publishing link the differences to ensure more complete answers*

Question	Answer	Marks	Notes
15	**Six** from: **Advantages** Benefits are immediate whereas with parallel running it takes time for the new system to be fully running With direct they only have to pay for one set of staff therefore saves costs Data is only entered once so saves duplication of data Less chance of errors in the new system as the new system is checked thoroughly before implementation Less changes of errors as the data is only entered once into the system Takes up less physical space as there is only one computer system **Disadvantages** Staff have to be trained and be fully ready to use the new system before it is implemented Staff cannot be trained on the new system whereas in parallel both systems are running If there is a problem then all the data can be lost; this could be disastrous for the company whereas in parallel there is always a backup Transferring the old files to the new system can be time consuming With direct staff cannot be trained gradually **To gain full marks the description must have correct answers for both advantages and disadvantages**	**6**	

Question	Answer	Marks	Notes
16(a)	**Three** from: Microphone Camera Pressure sensor	**3**	Do not allow keypad
16(b)	**Six** from: **Benefits** Faster recognition of the number plate//Saves time in having to check the number plates manually Less errors as the recognition system is automatic Saves money as there is no need to check the number plates manually More secure system as it only allows stored vehicles **Drawbacks** All vehicles need to be added to the database If the number plate is obscured/dirty it is difficult to read// or camera lens dirty// camera damaged Some number plates cannot be read due to odd font/sideways Needs to be kept up to date Expensive to setup and maintain the system **To gain full marks the discussion must have correct answers for both benefits and drawbacks**	**6**	Do not allow 24 hours as it's a school Allow opposites

Question	Answer	Marks	Notes
17(a)	**Visual (verification)** - 1 mark Re reading the document referring to the original **Double (data) entry** - 1 mark **One** from: One person types in the data again referring to the original document A second person types in the data from the original document The two entries are compared **Allow one mark for the method and one mark for the corresponding description**	**4**	
17(b)(i)	Checks that the data has been entered into the field	**1**	
17(b)(ii)	Checks the data being entered is of the correct data type	**1**	