Cambridge Assessment International Education

Cambridge International AS & A Level

INFORMATION TECHNOLOGY **9626/01**

Paper 1 Theory **For examination from 2025**

MARK SCHEME

Maximum Mark: 70

Specimen

This document has **10** pages.

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 descriptions 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 descriptions for the question
- the specific skills defined in the mark scheme or in the generic level descriptions 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 descriptions.

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 descriptions in mind.

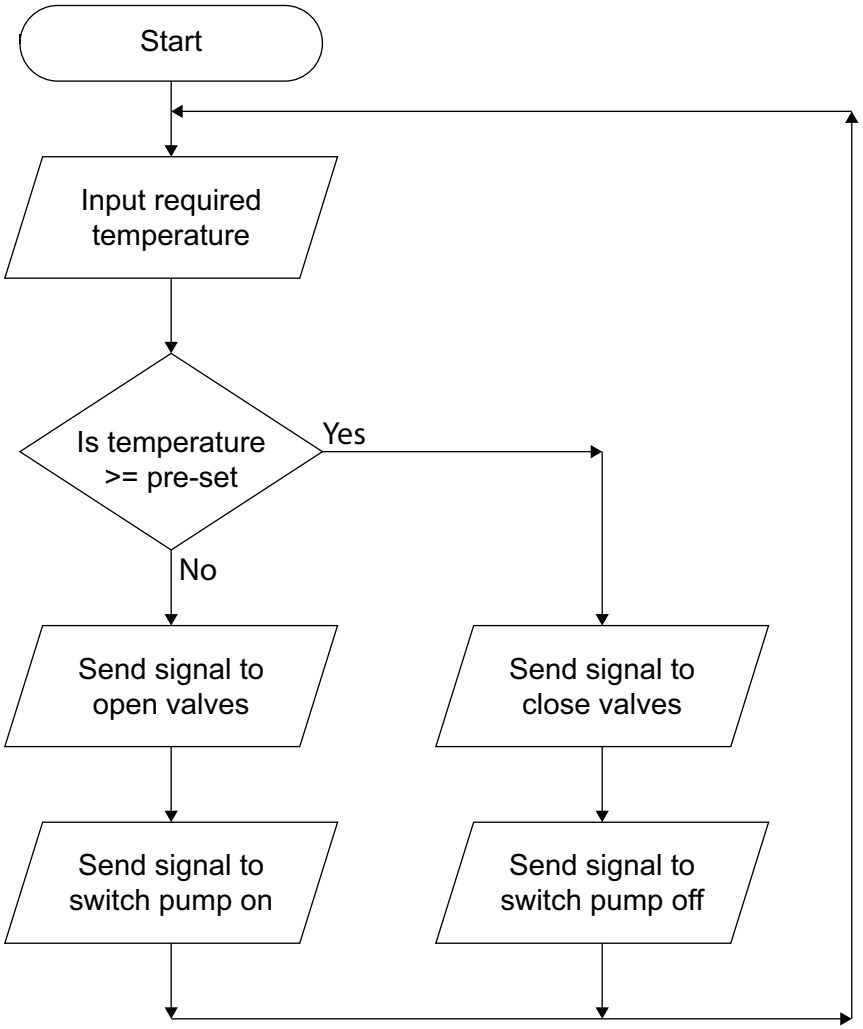
Question	Answer	Marks
1	**One mark per bullet point to a maximum of three marks.** • Allocates memory to software. • Sends data/instructions to hardware. • Responds to input devices. • Opens and closes files on storage devices. • In multi-tasking/multi-programming systems allocates processing time to each task/program.	**3**

Question	Answer	Marks
2	**One mark per bullet point to a maximum of two marks for direct source.** • Interviewing people • Questionnaires • Mailshots • Online feedback forms **One mark per bullet point to a maximum of two marks for indirect source.** • Word of mouth • Looking at complaints • Monitoring customer purchases • Other companies' marketing data	**4**

Question	Answer	Marks
3	**One mark per bullet point to a maximum of six marks.** **To achieve full marks, candidates must include at least one bullet point from what is effective and one bullet point from what is not effective.** **One mark can be awarded for a reasoned conclusion.** What is effective • Format checks pick up errors so rejects data that does not match the date structure. • Data that gets through is in the format required. Examples • Valid example of employee data that would be rejected by format check. • Valid example of date joined that would be rejected by format check. What is not effective • Format checks only check structure not content so inaccurate data could be accepted. • Because format checks allow inaccurate data to pass, the database would return unreliable results. • Additional validation checks would be required. Examples • Valid example of employee data that would pass format checks but is incorrect / digits had been transposed. • Valid example of date joined that would pass format checks but is incorrect.	**6**

Question	Answer	Marks
4(a)	**One mark per bullet point to a maximum of two marks.** • Customer ID or equivalent • Stock/item ID or equivalent	**2**
4(b)	**One mark per bullet point to a maximum of six marks.** • Transaction file is sorted into same order as master file. • First record in the transaction file is read. • First record in the old master file is read. • These two records are compared. • If records do **not** match, the computer writes old master file record to new master file. • If records match, the computer calculates the new amount owed using the current amount from master file and value of purchase from transaction file. • Processed record is written to new master file. • Process is repeated until end of old master file.	**6**

Question	Answer	Marks
5(a)	**One mark per bullet point to a maximum of two marks.** • Repeats the audio you have selected again and again. • The volume decreases each time. • The delay time between each repeat is fixed. • There may/may not be a pause between each repeat. • Can be used to create a simple loop.	**2**
5(b)	**One mark per bullet point to a maximum of two marks.** • To reduce background sounds. • To improve the quality of the sound for the listener. • Would not be suitable for individual clicks and pops or irregular sounds such as from traffic or an audience.	**2**
5(c)	**One mark per bullet point to a maximum of two marks.** • The higher the sampling resolution, the more accurately the wave form of the sound will be converted from analogue to digital. • The higher the sampling resolution, the greater the file size. • The frequency for each sample is stored in a number of bits, called sampling resolution or bit depth / is the number of bits per sound sample. • Each additional bit doubles the number of values that can be stored.	**2**

Question	Answer	Marks
6	 **One mark per bullet point to a maximum of five marks.** • Suitable input • Suitable question in decision box • Yes(Y) and No(N) in correct places (accept the question in the decision box could be reversed to use the < sign) • Additional flow lines added correctly • Use of correct arrow heads	**5**

Question	Answer	Marks
7(a)	• Line (graph)	**1**
7(b)	• Bar/column (chart)	**1**

Question	Answer	Marks
8(a)	**One mark per bullet point to a maximum of four marks.** **To achieve full marks, candidates must include at least one bullet point from proprietary software and one bullet point from one open-source software.** Proprietary software: • has been created by a software company using a particular encoding scheme • is designed so that the decoding of this stored data is only easily done with software that the company itself has developed • usually keeps the specification of the data encoding format secret/ confidential • can be published but its use is restricted through licences so that only the company itself / users with licences may use it. Open-source software: • is free and openly available • is not covered by any copyrights/patents • allows users to modify and share it as those who create open source products publish the code.	**4**
8(b)	**One mark per bullet point to a maximum of two marks.** • Not everyone can afford proprietary software / it is free. • It is easier to transfer data from one area to another as the computers being used may not have compatible software. • It is able to read archive proprietary files whereas new proprietary software may not be able to read files that have been archived.	**2**

Question	Answer	Marks
9	**One mark per bullet point to a maximum of six marks.** • Performs the reasoning of an expert system. • Uses a series of IF … THEN statements. • Uses the rules base. • Interrogates the ‘database of facts’ (in the knowledge base). • Uses inputs from the user to try and match them with the contents of the ‘database of facts’. • Processes the rules to try and reach possible solutions/diagnoses. • Interacts with/uses the user interface. • Generates questions based on the inputs it has received. • Narrows down the number of possible solutions.	**6**

Question	Answer	Marks

10	**One mark per bullet point to a maximum of eight marks.**
	
	• Initialisation of appropriate variables to a starting value
	• Input the number
	• Appropriate use of IF ... THEN ... ENDIF
	• Comparison
	• Increment of the count
	• Loops the correct amount of times
	• Initialisation and output outside the loop
	• Output the smallest number
	
	One possible example could be:
	
	count ← 0
	
	smallest ← 0
	
	REPEAT
	  INPUT number
	  IF number < smallest
	  THEN
	  smallest ← number
	  ENDIF
	  count ← count + 1
	UNTIL count = 8
	OUTPUT smallest
		8

Question	Answer	Marks
11	**One mark per bullet point to a maximum of eight marks.** **One mark can be awarded for a reasoned conclusion.** **Maximum of six marks for advantages:** • Databases efficiently store lots of data (students, marks, tests, grades, etc.). • Relational databases have tables that can be linked to allow for easy organisation of data. • Easy to interrogate/extract a list of marks/grades, etc. • Easy to find precise individual students' details, marks, etc. • Queries can be saved for reuse if additional students join or for subsequent years. • Easy to create complex reports with data from different tables / use SQL. • Once created the database structure can be reused / you can export the data and the database structure. • Easy to create a user-friendly form for teachers to input student marks with features such as drop-down lists, tick boxes, calendars, etc. • Easy to validate data on entry, including possible examples of data validation that could be used. **Maximum of six marks for disadvantages:** • Calculated fields and graphs and charts can be difficult to create within the database software. • Some commands are very difficult to program, for example, assigning grades. • Teacher would need specialist knowledge of programming. • The marks and grade distributions are difficult to analyse within the database software. • The data would need to be exported. • It is difficult to display the data in a usable form, for example, charts/graphs for teachers / mail merge to report student grades.	**8**

Question	Answer	Marks
12(a)	**One mark per bullet point to a maximum of two marks.** • Software designed to collect information about a user's activities. • Data such as passwords is passed to a remote server/attacker/hacker (without the user's knowledge). • A keylogger is a type of spyware which collects a record of the user's key strokes.	**2**
12(b)	**One mark per bullet point to a maximum of two marks.** • Automatically generates advertisements in order to gain revenue for its author. • Advertisements may appear in the user interface/screen shown to the user by the software. • Examines which internet sites visited and presents advertising according to the types of goods/services the user is interested in.	**2**

Question	Answer	Marks
12(c)	**One mark per bullet point to a maximum of two marks.** • A standalone (malicious) computer program that replicates itself in a computer system. • Many copies are then sent to other computers. • Worms almost always cause some harm to / slow down the network even if only by consuming bandwidth.	**2**
12(d)	**One mark per bullet point to a maximum of two marks.** • Blocks access to the user's data until a ransom is paid. • Encrypts files / locks system with key known to author of ransomware.	**2**

