CAMBRIDGE
International Education

Cambridge International AS & A Level

INFORMATION TECHNOLOGY **9626/32**

Paper 3 Advanced Theory **February/March 2026**

MARK SCHEME

Maximum Mark: 70

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 February/March 2026 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

PUBLISHED

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 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.

Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
	Benefit of the doubt
	To indicate where a key word/phrase is missing
	Incorrect
	Indicate a point in an answer
	Ignore subsequent work
	Statement/points are linked
	Maximum number of marks that can be awarded
	Not answered question
Off-page comment	Allows comments to be entered at the bottom of the RM marking window and then displayed when the associated question item is navigated to.

Annotation	Meaning
REP	To indicate a point that has already been made or was given in the question
SEEN	Indicates that work/page has been seen including blank answer spaces and blank pages.
	Correct
TV	Too vague
	Indicate a point in an answer

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.

Notes for examiners:

Examiners must ensure that annotations are placed to show that the whole answer has been seen
Annotations MUST be placed in white space close to where the mark is awarded
Before submitting a script please check all ticks match marks, and vice versa
Read the full sentence / answer before marking it
Any blank pages place one SEEN annotation

Question	Answer	Marks
1	**SIX** from: • In a function • (id) refers to the HTML element being affected / referenced in the function / statement (1st) passed from variable to function (1) • (id) is unique • Changes are to inline style • Used to set whether element is visible (or not) / can be seen (or not) • 'initial' is altered to desired value // value of 'initial' is changed • Set to 'inherit' then element is the same as its parent element • Set to 'visible' then element is shown • Set to 'hidden' then element is not visible (1st) leaves a blank space where element is placed / would be // empty space is left where element is (1) • Set to 'collapse' (in table) element in cell / row is not visible (1st) leaves a blank space where element is placed / would be // empty space is left where element is / takes out a row where element is (1).	**6**

Question	Answer	Marks
2	**SIX** from: • Web browser sends a request (from the client device / laptop / valid computing device) • using HTTP • to web server listening / receiving on port 80/8080 • Web server sends response (to client device) // data / information sent back to web browser / client device • Device passes response to web browser // web browser receives response • use HTTPS (1st) for <u>secure</u> connection / exchange of requests / responses / encrypted exchange (1) • TLS used (to encrypt HTTP into HTTPS) • Requests / responses exchanged for every element of web page (1st) until all content / whole web page is obtained / received by web browser (1).	**6**

Question	Answer	Marks
3	**EIGHT** from: **ONE** mark for: • Valid description of static routing Max **SIX** from: *Benefits:* • Network performance is predictable (as the path taken by data packets is known to administrators) • Routers do not share tables / information about the network status • Less (network) bandwidth is used // network overheads are less • Security of packets / network is / can be greater • Routers use less / no CPU cycles / resources to calculate routes / communicate • Router performance is higher / no time taken is working out route for packet • Can be used to provide a backup / fall back route if dynamic routing / main route links fail • Can be used in large networks to reduce the number of (apparent) routes known to routers so that less information is passed between routers / increase network performance Max **SIX** from: *Drawbacks:* • Set up / initial configuration is time-consuming resulting in slow / lengthy installation / set up / deployment • Every router has to be configured separately • Configuration is / can be prone to errors • Errors in configuration can result in data / packet loss / reduced network performance • Difficult to configure / does not work well when used for large network / growing / expanding networks • If one router fails then section / whole network (may be) affected / reduced network performance • Maintenance / monitoring / fault finding of routes can be time-consuming / difficult • Administrator / technician should have complete knowledge of whole network • (Possible) increase in network congestion.	**8**

Question	Answer	Marks
4(a)	**FOUR** from: • Uses encryption (1st) asymmetric (1) only owner knows the private key needed / used to access the records (1) • Some (transaction) data / how much is sent / wallet addresses (of sender / receiver) is visible / unencrypted • Nodes check that a transaction is valid / approve before it as allowed to proceed (1st) a new 'block' is added to the chain (only) when transaction is approved (1) • Blockchain stored / replicated / synchronised across peer-to-peer nodes / computers • Acts as a distributed ledger.	**4**
4(b)	**TWO** from: • Loss of the private key results in loss of the transactions / value of the currency / currency cannot be accessed at all • Transactions cannot proceed without consent / agreement of all / every nodes • Large number of nodes means transactions can take a long time to finalise • Transactions cannot (easily) be amended / altered due to every node having to agree / be updated.	**2**

Question	Answer	Marks
5(a)	**TWO** from: • Software / algorithms to make decisions / take action based on input from the / its environment • Learns from experience / problem-solving / iteration of the processes (1st) to increase probability / chance of achieving a goal / desired outcome (1) always works towards achieving its success criteria (1).	**2**
5(b)	**TWO** from: e.g.: • can analyse / deal with extremely large / vast sets of data quickly / simultaneously • makes decisions without the unconscious bias of human decision-making • can work continuously with consistent results over very long periods • no human error • used in data mining to make discoveries.	**2**

Question	Answer	Marks
5(c)	**TWO** from: e.g.: • AI cannot / do not act intuitively / make guesses / make assumptions • AI lacks creativity / original ideas • AI does not use / have 'common sense' / feelings / thoughts in making decisions / lacks empathy / cannot feel emotions • Difficult for humans to validate / check decisions / outcomes (due to vast amounts of data).	**2**

Question	Answer	Marks
6(a)	**THREE** from: • Used by software / applications / apps to prepare / encapsulate its data into packets • Adds service type / port number to identify type of application sending data • Determines which application should deal with / receive incoming data packet (1st) by reference to service type / port number (1) • Send / receive / decode / unwrap packets of data to / from transport layer (of network) stack.	**3**
6(b)	**THREE** from: • Add headers (1st) containing source / destination ports (to a packet from application layer) (1) • Controls / sets up the type of connection to be used (between devices for the packets from the application layer) (1st) connection-less / UDP or connection oriented / TCP (1) • Adds error-checking information (if connection is to be connection-oriented / TCP) • Pass packets to internet layer for addressing • Direct received packets to port numbers / applications given in headers (that were added at application layer).	**3**

Question	Answer	Marks
7(a)	**FOUR** from, e.g.: • The objectives / goals of the project • The types of work / methods / tasks to be used • Workflow strategies • Assignment of tasks • Timeline of the project • (Outline of) budget (requirements / constraints) • Product breakdown structure (PBS) analysis • Deliverables / what has to be created and delivered at the end of the project • Management of / measurement of satisfaction / expectation of (potential) end users / stakeholders • Constraints / restrictions to the project's progress • Allowance for any changes in user requirements (during the project).	**4**
7(b)	**THREE** from: • Measurable outcomes from a project (1st) specific / precise / concise (1) • Required for completion / fulfilment of project // once achieved the project ends • Defined at start of project / required before project starts / begins • Required by users / stakeholders / client • Can be set for different stages / tasks / points in project.	**2**

Question	Answer	Marks
8	**SIX** from, e.g.: • Creates three-dimensional (3D) images of anatomical features / body parts can be viewed from many angles that can be used for teaching / training can be used for diagnosis of disease / injuries • Images can be overlaid onto real people / used in augmented reality allow very / more precise placement of surgical instruments during procedures allow very / more precise placements of prosthetics • (holographic) storage of very large / massive / enormous amounts of data data can be overlaid onto person / organ during procedures gives doctors / surgeons access to data without having to look away from patient • Used to enhance virtual consultations / patients virtual visit to doctor remotely show holographic images of body part / diseased area to doctor.	**6**

Question	Answer	Marks
9	**SIX** from: • Arrow **FROM** passenger to enquiry 1 mark • Source symbols / ovals on **all 3** of enquiry + passenger + ticket displayed 1 mark • Arrow **FROM** ticket reservation system **TO** ticket creation system • **AND** Arrow **FROM** ticket creation system **TO** ticket displayed 1 mark • Process symbols on **BOTH** ticket reservation system **AND** ticket creation system 1 mark • Arrows TO **AND** FROM ticket reservation system – Information into city 1 mark • Arrows TO **AND** FROM ticket reservation system – Information from city 1 mark • Store symbols on **BOTH** information into **AND** from city 1 mark ***Process name can be anywhere, ignore numbers in the symbol*** The correct symbols from the syllabus are: Data flow diagram symbols Element / Symbol Process Data store Data source or destination (inputs and outputs) **Process: Allow these alternatives:** **(mark point 4)** **Must be a circle NOT an oval – oval is used for data source in syllabus.** **Store : Only allow symbols from syllabus. The store symbol is shown in the Q and syllabus shows it open at right end.**	**6**

Question	Answer	Marks
10(a)	**TWO** from: • Continuous transmission / reception of data (1st) instead of in batches (1) • Data is processed as it is received / in real-time (1st) rather than being stored for later processing / use (1).	**2**
10(b)	**THREE** from: • No need to wait for the whole / complete file to be available / downloaded before data is viewed / accessed // no need to be downloaded • Can access (very large) files without need for local storage • Greater choice of files // no need to hold / have collection of video files // no need to have physical media (e.g. DVD) stored • Can access / watch same video file on multiple devices simultaneously.	**3**
10(c)	**ONE** from e.g.: • Valid example / statement / description of use of data streaming / continuous data. E.g. monitoring / analysing server / network activity for malicious activities / data breaches receiving input from sensors tracking events e.g. stocks / shares / financial transactions in computer gaming to distribute player actions / high scores to other players distribution of live news around the world.	**1**

Question	Answer	Marks
11	**EIGHT** from: **ONE** mark for naming all **four** types of maintenance i.e. perfective, preventive, corrective, adaptive. Max **TWO** from: • software product is amended / altered / modified / updated (1st) after delivery / completion (1) • to correct faults / improve performance Max **EIGHT** from: • Maintenance has to be / is a continuous process • Problems arise / throughout lifespan • During development a maintenance plan is created • Engineers are prepared for errors / faults / bugs (1st) that occur during development / after delivery (1) • Maintenance acts on reported errors / problems from users (1st) this is called corrective maintenance (1) • Errors are investigated / analysed / documented • Solutions to errors / problems / bugs are found • App code is amended / altered / updated (1st) to correct errors / faults / bugs (1) • Ensures app / software performs properly throughout its lifespan • Adapts app to changing hardware / OS in smartphone (1st) called adaptive maintenance (1) • Ensures it can be migrated to newer versions • Customers do not lose functions / use if upgrading / changing smartphones • App code amended / altered to improve performance / to add features (1st) called perfective maintenance • App code amended / altered to correct known / hidden faults / low priority faults (1st) called preventative maintenance (1) to prevent the faults becoming major issues (1).	**8**