Assessment overview

All candidates take three papers. Candidates will be eligible for grades A* to G.

All candidates take:

Paper 1 1 hour 30 minutes
Theory 40%

80 marks

Questions will be based on sections 1–21 of the subject content

All questions are compulsory

Externally assessed

and:

Paper 2 2 hours 15 minutes
Document Production, Databases and Presentations 30%

70 marks

This test assesses the practical skills needed to use the applications covered in sections 17, 18 and 19 of the subject content

Candidates must demonstrate the practical skills relevant to sections 11–16

All tasks are compulsory

Externally assessed

and:

Paper 3 2 hours 15 minutes
Spreadsheets and Website Authoring 30%

70 marks

This test assesses the practical skills needed to use the applications covered in sections 20 and 21 of the subject content

Candidates must demonstrate the practical skills relevant to sections 11–16

All tasks are compulsory

Externally assessed

Information on availability is in the **Before you start** section.

Assessment objectives

The assessment objectives (AOs) are:

AO1 Recall, select and communicate knowledge and understanding of ICT

AO2 Apply knowledge, understanding and skills to produce ICT-based solutions

AO3 Analyse, evaluate, make reasoned judgements and present conclusions

Weighting for assessment objectives

The approximate weightings allocated to each of the assessment objectives (AOs) are summarised below.

Assessment objectives as a percentage of the qualification

Assessment objective	Weighting in IGCSE %
AO1 Recall, select and communicate knowledge and understanding of ICT	32
AO2 Apply knowledge, understanding and skills to produce ICT-based solutions	60
AO3 Analyse, evaluate, make reasoned judgements and present conclusions	8
Total	100

Assessment objectives as a percentage of each component

Assessment objective	Weighting in components %		
	Paper 1	Paper 2	Paper 3
AO1 Recall, select and communicate knowledge and understanding of ICT	80	–	–
AO2 Apply knowledge, understanding and skills to produce ICT-based solutions	–	100	100
AO3 Analyse, evaluate, make reasoned judgements and present conclusions	20	–	–
Total	100	100	100

3 Subject content

This syllabus gives you the flexibility to design a course that will interest, challenge and engage your learners. Where appropriate you are responsible for selecting resources and examples to support your learners' study. These should be appropriate for the learners' age, cultural background and learning context as well as complying with your school policies and local legal requirements.

The following information identifies content which must be covered within all topics. Where the term 'including' is used, everything listed must be studied. However, this list is not exhaustive and other related aspects should also be studied.

Note that no marks are awarded for brand names of software packages or hardware in candidate responses.

1 Types and components of computer systems

1.1 Hardware and software

Candidates should know and understand:	Notes and Guidance
Hardware	Hardware consists of the physical components of a computer system Internal components including Central Processing Unit (CPU), processor, motherboard Internal memory including random access memory (RAM), read-only memory (ROM) Hardware components including graphics card, sound card, Network Interface Card (NIC), camera, internal/ external storage devices, input and output devices
Software	Software are programs for controlling the operation of a computer or processing of electronic data Applications software provides the services that the user requires to solve a task Examples of applications software including word processing, spreadsheet, database management systems, control, measurement, applets and apps, video editing, graphics editing, audio editing, computer aided design (CAD) System software provides the services that the computer requires to operate Examples of system software including compilers, linkers, device drivers, operating systems and utilities
Analogue and digital data	Characteristics of analogue and digital data Differences between analogue and digital data The need to convert: • analogue to digital data so it can be processed by a computer • digital data to analogue data so it can be used to control devices

1.2 The main components of computer systems

Candidates should know and understand:	Notes and Guidance
Central Processing Unit (CPU)	The role of the CPU in processing instructions entered into the computer in order to produce an output
Internal memory	Characteristics of ROM and RAM Differences between ROM and RAM
Input and output devices	Characteristics of input and output devices Differences between input and output devices
Backing storage	Characteristics of backing storage Differences between backing storage and internal memory

1.3 Operating systems

Candidates should know and understand:	Notes and Guidance
Operating systems	Characteristics of operating systems including: Command Line Interface (CLI), Graphical User Interface (GUI), dialogue based and gesture based interface Differences between types of operating systems Advantages and disadvantages of the different types of operating systems

1.4 Types of computer

Candidates should know and understand:	Notes and Guidance
Desktop computer	Characteristics of a desktop computer Uses of a desktop computer including office and business management, education, gaming and entertainment
Mobile computers	Characteristics of mobile computers including laptop computers, smartphones, tablet and phablet computers Uses of mobile computers including office and business management, education, gaming, entertainment and remotely controlled devices Advantages and disadvantages of the different types of computer including portability and expandability

1.5 Emerging technologies

Candidates should know and understand:	Notes and Guidance
Impact of emerging technologies	Impact on everyday life including Artificial Intelligence (AI), extended reality (virtual and augmented)

2 Input and output devices

2.1 Input devices and their uses

Candidates should know and understand:	Notes and Guidance
Input devices	Characteristics, uses, advantages and disadvantages of input devices including: keyboard, numeric keypad, pointing devices, remote control, joystick/driving wheel, touch screen (as an input device), scanners, camera, microphone, sensors, light pen

2.2 Direct data entry and associated devices

Candidates should know and understand:	Notes and Guidance
Direct data entry	Characteristics, uses, advantages and disadvantages of direct data entry devices including: magnetic stripe reader, chip and PIN reader, Radio Frequency Identification (RFID) reader, Optical Mark Recognition/Reader (OMR), Optical Character Recognition/Reader (OCR), bar code reader, QR scanner

2.3 Output devices and their uses

Candidates should know and understand:	Notes and Guidance
Output devices	Characteristics, uses, advantages and disadvantages of output devices including: monitors, touch screen (as an output device), multimedia projector, laser printer, inkjet printer, dot matrix printer, plotter, 3D printers, speaker, actuator

3 Storage devices and media

Candidates should know and understand:	Notes and Guidance
Storage devices	Characteristics, uses, media, advantages and disadvantages of storage devices including magnetic, optical and solid-state Magnetic drives including fixed and portable magnetic hard drives, magnetic tape drives Optical drives including CD, DVD, Blu-ray Fixed and portable solid-state drive (SSD) including SSD, pen drive, flash drive
Storage media	Characteristics, uses, advantages and disadvantages of storage media including magnetic, optical and solid-state Magnetic drives including magnetic hard disks, magnetic tape Optical discs including CD, DVD, Blu-ray Solid-state media including memory cards (SD, xD, CFast)

4 Networks and the effects of using them

4.1 Networks

Candidates should know and understand:	Notes and Guidance
Router	The operation and purpose of a router including: • connecting networks and devices to the internet • storing computer addresses in a router • routing data packets
Common network devices	Including: network interface cards (NIC), hubs, bridges, switches
wi-fi and Bluetooth	The uses of wi-fi and Bluetooth Connecting a device to a network using: • wi-fi • Bluetooth Similarities and differences between Bluetooth and wi-fi
Cloud computing	The characteristics, uses and issues relating to cloud computing How data is stored, managed and shared using cloud computing Advantages and disadvantages of using cloud storage compared to other methods

4.1 Networks continued

Candidates should know and understand:	Notes and Guidance
Common network environments	Characteristics, uses and purpose of an extranet, intranet and the internet The differences and similarities between an extranet, intranet and the internet
Network types	Local Area Network (LAN), Wireless Local Area Network (WLAN), Wide Area Network (WAN) and the differences between these networks

4.2 Network issues and communication

Candidates should know and understand:	Notes and Guidance
Security issues regarding data transfer	Privacy and confidentiality of data transfer
Passwords	Avoiding password interception by using up to date anti-spyware and regularly changing passwords The differences between strong and weak passwords
Other authentication methods	Including: zero login, biometric methods, magnetic stripes, smart cards, physical tokens, electronic tokens
Anti-malware software	Including the use of anti-malware and anti-virus software The operation of removing/quarantining viruses using up to date software Scanning the storage media used to transfer data Scanning the data/software when downloading
Electronic conferencing	Characteristics, uses, advantages and disadvantages of video-conferencing, audio-conferencing, web-conferencing The hardware, software and network connection required to set up each type of electronic conference

5 The effects of using IT

5.1 Microprocessor-controlled devices

Candidates should know and understand:	Notes and Guidance
The effects of using microprocessor-controlled devices	The positive and negative effects of microprocessors/ smart devices in monitoring and controlling devices in the home including the impact on lifestyle, leisure time, physical fitness, security of data, the degree of social interaction The positive and negative effects of microprocessors/ smart devices in monitoring and controlling transport including security of data, autonomous vehicles, transport safety

5.2 Potential health problems related to the prolonged use of IT equipment

Candidates should know and understand:	Notes and Guidance
Health issues	Including: repetitive strain injury (RSI), back problems, eye problems, headaches The causes of these health issues and strategies for preventing them

6 ICT applications

6.1 Communication

Candidates should know and understand:	Notes and Guidance
Communication media	Characteristics and uses including newsletters, posters, websites, multimedia presentations, audio, video, media streaming and ePublications
Mobile communication	The use of mobile devices for communication including: SMS messaging, phone calls, Voice over Internet Protocol (VoIP), video calls, accessing the internet

6.2 Modelling applications

Candidates should know and understand:	Notes and Guidance
Computer modelling	Including: personal finance, bridge and building design, flood water management, traffic management, weather forecasting Advantages and disadvantages of using computer modelling rather than humans

6.3 Computer controlled systems

Candidates should know and understand:	Notes and Guidance
Computer controlled systems	Including: robotics in manufacture, production line control, autonomous vehicles Advantages and disadvantages of using computer controlled systems rather than humans

6.4 School management systems

Candidates should know and understand:	Notes and Guidance
School management systems	Systems are used to manage learner registration and attendance Systems are used to record learner performance including computer aided learning

6.5 Booking systems

Candidates should know and understand:	Notes and Guidance
Online booking systems	Characteristics, uses, advantages and disadvantages of online booking systems including travel industry, concerts, cinemas, sporting events

6.6 Banking applications

Candidates should know and understand:	Notes and Guidance
Banking applications	Characteristics, uses, advantages and disadvantages of Automatic Teller Machines (ATM) including: withdrawing cash, depositing cash or cheques, checking account balance, mini statements, bill paying, money transfers Characteristics, uses, advantages and disadvantages of Electronic Funds Transfer (EFT), credit/debit card transactions, cheques, internet banking

6.7 Computers in medicine

Candidates should know and understand:	Notes and Guidance
Information systems in medicine	Characteristics and uses of patient records, pharmacy records
3D printers	Including printing of prosthetics, tissue engineering, artificial blood vessels, customised medicines

6.8 Expert systems

Candidates should know and understand:	Notes and Guidance
Expert systems	Characteristics, uses and purpose of expert systems including mineral prospecting, car engine fault diagnosis, medical diagnosis, chess games, financial planning, route scheduling for delivery vehicles, plant and animal identification Components of an expert system: user interface, inference engine, knowledge base, rules base, explanation system How an expert system is used to produce possible solutions for different scenarios

6.9 Computers in the retail industry

Candidates should know and understand:	Notes and Guidance
Computers in the retail industry	Characteristics and uses of computers in the retail industry including point of sale (POS) terminals and electronic funds transfer at point of sale (EFTPOS) terminals Point of sale (POS) terminals including updating stock files automatically and ordering new stock automatically Electronic funds transfer at point of sale (EFTPOS) terminals including checking of the validity of cards, the use of chip and PIN, the use of contactless cards, the use of Near Field Communication (NFC) payment, the communication between the supermarket computer and the bank computer
Internet shopping	Characteristics, advantages and disadvantages of internet shopping

6.10 Recognition systems

Candidates should know and understand:	Notes and Guidance
Recognition systems	Characteristics, uses, advantages and disadvantages of: Optical Mark Recognition (OMR) including school registers, multiple-choice examination papers, barcode, QR code Optical Character Recognition (OCR) including automated number plate recognition (ANPR) systems Radio Frequency Identification Device (RFID) including tracking stock, passports, automobiles, contactless payment Near Field Communication (NFC) including payment using a smartphone Biometric recognition including face, iris, retina, finger, thumb, hand, voice

6.11 Satellite systems

Candidates should know and understand:	Notes and Guidance
Satellite systems	Characteristics, uses, advantages and disadvantages of satellite systems including Global Positioning Systems (GPS), satellite navigation, Geographic Information Systems (GIS), media communication systems (satellite television, satellite phone)

7 The systems life cycle

7.1 Analysis

Candidates should know and understand:	Notes and Guidance
Analysis of the current system	Characteristics, uses, advantages and disadvantages of the research methods of observation, interviews, questionnaires and examination of existing documents
Record and analyse information about the current system	The need to identify the inputs, outputs and processing of the current system, problems with the current system, the user and information requirements for the new system
System specification	Identify and justify suitable hardware and software for the new system

7.2 Design

Candidates should know and understand:	Notes and Guidance
Design	Design file/data structures, input formats, output formats and validation routines File/data structures including field length, field name, data type, coding of data for example M for male, F for female Validation routines including range check, character check, length check, type check, format check, presence check, check digit Input formats including data capture forms Output formats including screen layouts and report layouts

7.3 Development and testing

Candidates should know and understand:	Notes and Guidance
Testing	The need to test the system before implementation Test designs, test strategies, test plan (test data, expected outcomes, actual outcomes, remedial action) following testing Test designs including the testing of data structures, file structures, input formats, output formats and validation routines Test strategies including to test each module, each function and the whole system The definition, characteristics and use of test data using normal, abnormal and extreme data The use of live data

7.4 Implementation

Candidates should know and understand:	Notes and Guidance
System implementation	Characteristics, uses, advantages and disadvantages of the four methods of implementation, direct changeover, parallel running, pilot running, phased implementation

7.5 Documentation

Candidates should know and understand:	Notes and Guidance
Documentation	Characteristics, uses and purpose of technical and user documentation Components of technical documentation including: purpose of the system/program, limitations of the system, program listing, program language, program flowcharts/algorithms, system flowcharts, hardware and software requirements, file structures, list of variables, input format, output format, sample runs/test runs, validation routines Components of user documentation including: purpose of the system, limitations of the system, hardware and software requirements, how to load/run/install software, how to save a file, how to print data, how to add records, how to delete/edit records, input format, output format, sample runs, error messages, error handling, troubleshooting guide/helpline, frequently asked questions, glossary of terms

7.6 Evaluation

Candidates should know and understand:	Notes and Guidance
Evaluate a solution	Evaluate a solution including the efficiency of the solution, the ease of use of the solution, and the appropriateness of the solution Compare the solution with the original task requirements, identify any limitations and necessary improvements to the system, evaluate the users' responses to the results of testing the system

8 Safety and security

8.1 Physical safety

Candidates should know and understand:	Notes and Guidance
Safety issues	Including: electrocution from spilling drinks near electrical equipment and touching live cables, fire from sockets being overloaded or equipment overheating, tripping over trailing cables, heavy equipment falling and injuring people The causes of these safety issues and strategies for preventing them

8.2 eSafety

Candidates should know and understand:	Notes and Guidance
Data protection	The principles of a typical data protection act and why data protection legislation is required
Personal data	Characteristics of personal and sensitive data including personal name, address, date of birth, a photograph in school uniform, medical history The need for personal data to be kept confidential and protected to avoid inappropriate disclosure
eSafety	The need for eSafety when using the internet, email, social media, online gaming Minimise the potential danger of using: The internet including only using trusted websites recommended by teachers, using a search engine that only allows access to age appropriate websites Email including an awareness of the potential dangers of opening or replying to an email from an unknown person. An awareness of the risks associated with sending personal identifiable data or images via email

continued

8.2 eSafety continued

Candidates should know and understand:	Notes and Guidance
eSafety continued	Social media including knowing how to block and report unwanted users, an awareness of the potential dangers of meeting an online contact face to face, avoiding the distribution of inappropriate images, avoiding the use of inappropriate language, respecting confidentiality of personal data of other people Online gaming including not using real names, not giving out personal or financial data

8.3 Security of data

Candidates should know and understand:	Notes and Guidance
Threats to data	Characteristics and effect of threats to data including hacking, phishing, pharming, smishing, vishing, viruses, malware, card fraud Hacking including the measures that must be taken in order to protect data Phishing, pharming, smishing, vishing including the methods that can be used to help prevent them Viruses and malware including how to take preventative action to avoid the danger of infecting a computer from a downloaded file Card fraud including shoulder surfing, card cloning, key logging
Protection of data	Characteristics and methods of protecting data including biometrics, digital certificate, secure socket layer (SSL), encryption, firewall, two-factor authentication, user id and password Biometrics including the use of biometric data Digital certificate including its purpose and contents Secure socket layer (SSL) including encrypted links between the server and the client computer Encryption including its purpose for the protection of data on hard discs, email, cloud, HTTPS websites Firewall including its purpose Two-factor authentication including its purpose and function User id and password including how they are used to increase the security of data

9 Audience

9.1 Audience appreciation

Candidates should know and understand:	Notes and Guidance
Audience appreciation	Show a clear sense of audience and purpose Planning ICT solutions that are responsive to and respectful of the needs of an audience Analyse the needs of an audience when creating ICT solutions

9.2 Copyright

Candidates should know and understand:	Notes and Guidance
Copyright	The need for copyright legislation and the principles of copyright relating to computer software (e.g. software piracy) The methods that software producers employ to prevent software copyright legislation being broken

10 Communication

10.1 Communication with other ICT users using email

Candidates should know and understand:	Notes and Guidance
email	Characteristics, uses and constraints of email communication including acceptable language, guidelines set by an employer, the need for security, netiquette, email groups, carbon copy (cc), blind carbon copy (bcc), forward, attachments Characteristics and effects of spam email including the methods which can be used to help prevent spam

10.2 Effective use of the internet

Candidates should know and understand:	Notes and Guidance
The internet	Characteristics, uses, advantages and disadvantages of using the internet including the differences between the internet, an intranet, an extranet and the World Wide Web (WWW), blog, forum, wiki, social networking Functionality including Internet Service Provider (ISP), structure of a web address, Uniform Resource Locator (URL), hyperlink, web browser Use of search engine including speed of searching, amount of information, the speed of finding relevant information, ease of finding reliable information Evaluating the information found on the internet including how up to date, reliable, biased and valid this information is Internet protocols including HyperText Transfer Protocol (HTTP), HyperText Transfer Protocol secure variant (HTTPS), File Transfer Protocol (FTP), Secure Socket Layer (SSL) Risks of using the internet including inappropriate and criminal material, restricting data through parental, educational and ISP control

11 File management

11.1 Manage files effectively

Candidates should be able to:	Notes and Guidance
Manage files	Locate stored files Open and import files of different types Save files in a planned hierarchical directory/folder structure Save files using appropriate file names Save and print files in a variety of formats including a document, screenshots, database reports, data tables, graphs/charts, a web page in browser view, a web page in HTML view Save and export in the file format of an application package including .docx, .doc, .xlsx, .xls, .sdb, .sdc, .accdb .odb, .rtf, .pptx, .ppt Save and export in a generic file format including .csv, .txt, .rtf, .pdf, .css, .htm, .jpg, .png
Candidates should know and understand:	
File formats	Characteristics and uses of file formats including css, csv, gif, htm, jpg, pdf, png, rtf, txt, zip, rar The need for generic file formats

11.2 Reduce file sizes for storage or transmission

Candidates should be able to:	Notes and Guidance
Compress files	Reduce file sizes for storage or transmission where necessary using file compression including .zip, .rar
Candidates should know and understand:	
File compression	The need to reduce file sizes for storage or transmission

12 Images

Candidates should be able to:	Notes and Guidance
Place and edit an image	Place an image with precision Resize an image as specified to maintain or adjust the aspect ratio of an image Crop an image Rotate an image Reflect (flip) an image horizontally or vertically Adjust the brightness of an image Adjust the contrast of an image Group and layer images including grouping and ungrouping, moving to the front or back
Candidates should know and understand:	
File size reduction	Recognise that reducing the file size can be achieved by reducing the image resolution or colour depth

13 Layout

Note: In this section 'document' relates to any of the applications used within sections 16 to 21.

13.1 Create or edit a document

Candidates should be able to:	Notes and Guidance
Create a new document, or edit an existing document	Enter and modify text and numbers with total accuracy Use editing techniques to manipulate text and numbers including highlight, delete, move, cut, copy, paste, drag and drop Place objects into the document from a variety of sources including text, image, screenshot, shapes, table, graph or chart, spreadsheet extract, database extract Wrap text around a table, chart or image including above, below, square and tight

13.2 Tables

Candidates should be able to:	Notes and Guidance
Work with tables within documents	Create a table with a specified number of rows and columns Place text or objects in a table Edit a table and its contents including insert row(s) and column(s), delete row(s) and column(s), merge cells Format a table including to set horizontal cell alignment (left, right, centre, fully justified), set vertical cell alignment (top, middle, bottom), show gridlines, hide gridlines, wrap text within a cell, shading/colouring cells, adjust row height, adjust column width

13.3 Headers and footers

Candidates should be able to:	Notes and Guidance
Use headers and footers appropriately within a range of software packages	Create or edit headers and footers Align the contents of the header and footer consistently within a document including to left margin, right margin and centred within margins Place text and automated objects in headers and footers including file information, page numbering, total number of pages, date, time
Candidates should know and understand:	
The purpose of headers and footers	

14 Styles

Candidates should be able to:	Notes and Guidance
Create, edit and apply styles	Create, modify, update and apply styles to ensure consistency of presentation Font including font face, type (serif, sans-serif), point size, colour Text alignment including left, right, centre, fully justified Text enhancement including bold, underline, italic Spacing including paragraph (before and after) and line Bullets including shape, alignment, line spacing and indent
Candidates should know and understand:	
Corporate house style	Purpose and uses of a corporate house style

15 Proofing

15.1 Software tools

Candidates should be able to:	Notes and Guidance
Reduce errors	Use automated software tools (spell check, grammar check) and make appropriate changes to ensure all work produced contains as few errors as possible Use validation routines to minimise data entry errors
Candidates should know and understand:	
Spell check software	Automated suggestions given by spell check software do not always give the correct response
Validation checks	Importance, characteristics and uses of appropriate validation including range check, character check, length check, type check, format check, presence check

15.2 Proofing techniques

Candidates should be able to:	Notes and Guidance
Perform visual verification	Identify and correct data entry errors including transposed numbers, incorrect spelling, inconsistent character spacing, inconsistent case
Proofread	Identify and correct inconsistent line spacing, remove blank pages/slides, remove widows/orphans, inconsistent or incorrect application of styles, ensure that tables and lists are not split over columns or pages/slides
Candidates should know and understand:	
Verification	Importance, characteristics and uses of verification including visual checking and double data entry to reduce data entry errors The need for validation as well as verification

16 Graphs and charts

Candidates should be able to:	Notes and Guidance
Create, label and edit a graph or chart	Select data to produce a graph or chart including using contiguous data, non-contiguous data and specified data ranges Select the graph or chart type Label the graph or chart including chart title, legend, sector labels, sector values, percentages, category axis title, value axis title, category axis labels, value axis labels, data value labels Add a second data series Add a second axis Format numerical values to a specified number of decimal places Format numerical values to display currency symbols Adjust the maximum and minimum values of an axis scale and set incremental values Enhance the appearance of a graph or chart including extracting a pie chart sector, changing the colour scheme or fill patterns

17 Document production

Candidates should be able to:	Notes and Guidance
Organise page layout	Edit page layout including page size, page orientation, page margins, number of columns, column width, spacing between columns, set and remove breaks (page, section and column breaks)
Format text	Set line spacing including: single, 1.5 times, double, multiple, spacing before and after paragraphs Set tabulation including: left, right, centred and decimal tabs, indented paragraphs and hanging paragraphs Text enhancement including bold, underline, italic, superscript and subscript, changes in case Create or edit lists including bulleted, numbered
Find and replace text	Including matching case, whole words
Navigation	Add and delete bookmarks/hyperlinks
Candidates should know and understand:	
Pagination	The purpose of setting page, section and column breaks
Gutter margin	The purpose of setting gutter margins

18 Databases

18.1 Create a database structure

Candidates should be able to:	Notes and Guidance
Create an appropriate database structure	Import data from existing files (including .csv, .txt) using specified field names to create tables Set appropriate data types to fields including text, numeric (integer, decimal, currency), date/time, Boolean/logical Set sub-types of numeric data including percentage, number of decimal places Set display format of Boolean/logical field (yes/no, true/false, checkbox) Set display format of date/time data Create and edit primary and foreign keys Create relationships between tables
Create and use a data entry form	Create a data entry form including specified fields, appropriate font styles and sizes, appropriate spacing between fields, character spacing of individual fields, use of white space, radio buttons, check boxes, drop down menus
Candidates should know and understand:	
Types of database	Characteristics, uses, advantages and disadvantages of a flat file and a relational database
Primary and foreign keys	Characteristics of primary key and foreign keys
Form design	Characteristics of good form design

18.2 Manipulate data

Candidates should be able to:	Notes and Guidance
Perform calculations	Use arithmetic operations or numeric functions to perform calculations including calculated fields, calculated controls Use formulae and functions to perform calculations at run time including addition, subtraction, multiplication, division, sum, average, maximum, minimum, count
Sort data	Use a single criterion, or multiple criteria to sort data into ascending or descending order
Search and select data	Use a single criterion, or multiple criteria to select subsets of data using a query perform searches using a variety of operators including AND, OR, NOT, LIKE, >, <, =, >=, <=, <> perform searches using wildcards

18.3 Present data

Candidates should be able to:	Notes and Guidance
Display data	Produce reports to display data including displaying all the required data and labels in full Use appropriate headers and footers within a database report including report header, report footer, page header, page footer Set report titles Produce different output layouts including controlling the display of data, labels, tabular or columnar format Align data and labels appropriately including right aligning numeric data and decimal alignment Control the display format of numeric data including number of decimal places, currency symbol, percentage

19 Presentations

Candidates should be able to:	Notes and Guidance
Create a presentation	Create a new presentation using a text file
Use a master slide	Insert and edit objects consistently including images, text, shapes, logos, slide headers and footers, placeholder position, automated slide numbering Format master slide objects including headings, subheadings, bullets, background colour
Edit a presentation	Apply slide layout Insert a new slide Move or delete a slide Insert and edit objects on a slide including text (headings, subheadings, bulleted lists), images (still images, video clips, animated images), charts, tables, audio clips (sound), symbols, lines, arrows, call out boxes and shapes Add presenter notes Insert and edit a hyperlink including linking text or objects to a slide within the presentation, an external file or an email address Insert an action button including modifying settings to navigate to a specified slide or file Add alternative text/screentip to an object Apply consistent transitions between slides Apply consistent animation effects on text, images and other objects Hide slides within a presentation

19 Presentations continued

Candidates should be able to:	Notes and Guidance
Output the presentation	Display the presentation for a variety of purposes including looped on-screen carousel, presenter controlled Print the presentation in a variety of layouts including full page slides, presenter notes, handouts

20 Spreadsheets

20.1 Create a data model

Candidates should be able to:	Notes and Guidance
Create and edit a spreadsheet model	Insert cell(s), row(s) and column(s), delete cell(s), row(s) and column(s), merge cells Create formulae using cell references Replicate formulae using absolute and relative cell references where appropriate Use arithmetic operators in formulae including add, subtract, multiply, divide, indices Use named cells and named ranges Use functions including sum, average, maximum, minimum, integer, rounding, counting, LOOKUP, VLOOKUP, HLOOKUP, XLOOKUP, IF Use external data sources within functions Use nested functions
Candidates should know and understand:	
Formulae and functions	The difference between a formula and a function
Order of operations	The order in which mathematical operations are performed including the use brackets to make sure that formulae work
Cell referencing	Characteristics and use of absolute and relative cell referencing

20.2 Manipulate data

Candidates should be able to:	Notes and Guidance
Sort data	Using a single criterion, or multiple criteria sort data into ascending or descending order
Search and select data	Using a single criterion, or multiple criteria, select subsets of data Perform searches using a variety of operators including AND, OR, NOT, >, <, =, >=, <=, <> Perform searches using wildcards

20.3 Present data

Candidates should be able to:	Notes and Guidance
Adjust the display features	Display either formulae or values Adjust row height, column width and cell sizes so that all data, labels, and formulae is fully visible Wrap text within cells so that all data is fully visible Hide and display rows and columns
Format a spreadsheet	Enhance a spreadsheet including text colour, cell colour, bold, underline, italic, shading Format numeric data appropriately including to display the number of decimal places, different currency symbols, percentages Use conditional formatting to change the display format depending on the contents of a cell
Set page layout	Set the orientation to portrait or landscape Control the page layout to print including specified number of pages, print area, display or hide gridlines, display or hide row and column headings

21 Website authoring

21.1 Web development layers

Candidates should know and understand:	Notes and Guidance
The three web development layers	Content layer is used to enter the content and create the structure of a web page Presentation layer is used to display and format elements within a web page Behaviour layer is for a scripting language to control elements within a web page

21.2 Create a web page

Candidates should be able to:	Notes and Guidance
Use HTML in the content layer	Create the content layer of a web page Place appropriate elements in the head section of a web page including: • insert a page title to display in the browser • attach external stylesheets (with the correct hierarchy, using a relative file path) • metatags to use the appropriate attributes including to define the charset, name attributes (description, keywords, author, viewport), content attributes • default target windows Place appropriate content in the body section of a web page Insert a table including table header, table rows, table data Use appropriate table attributes to meet the needs of the audience including to adjust cells to span more than one row or column, to set table and cell sizes in terms of pixels or % values, to apply styles to tables Insert appropriate objects into a web page including text, images, sound clips, video (display controls, remove controls, autoplay), to adjust image or video size, aspect ratio and apply alternate text Use the tag including to apply styles and classes Apply tags to text within a web page to display pre-defined styles including h1, h2, h3, p, li Apply classes to elements within a web page Apply styles to elements within a web page including to a list (ordered list, unordered list) Create a bookmark within a web page using an id attribute Create hyperlinks from text and images to: • bookmarks on the same page • other locally stored web pages • a website using the URL • send mail to a specified email address • to open in a specified location (the same window, a new window, with a window named as specified)

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