Side by side comparison of topics between exam boards

This table shows how each exam board has covered topic areas within their specifications. The original spreadsheet used to create this table and an expanded worksheet that includes the specification content alongside the codes can be found at the top of the page at www.gcsecs.org Note that in addition to Edexcel's specification, their Getting Started Guide has been used to identify where content is covered.

Number	Topic	AQA	Edexcel	OCR
1	Hardware vs software	3.4.1.a	-	-
2	Purpose of CPU	3.4.5.a	3.1.1	1.1.1.a
3	Fetch-execute cycle	3.4.5.c	3.1.1	1.1.1.a
4	ALU	3.4.5.a	3.1.1	1.1.1.b
5	Control Unit	3.4.5.a	3.1.1	1.1.1.b
6	Clock	3.4.5.a	3.1.1	-
7	Cache	3.4.5.d	-	1.1.1.b
8	Registers	3.4.5.a/d	3.1.1	1.1.1.b
9	Bus	3.4.5.a	3.1.1	-
10	MAR	-	-	1.1.1.c
11	MDR	-	-	1.1.1.c
12	Program Counter	-	-	1.1.1.c
13	Accumulator	-	-	1.1.1.c
14	Von Neumann stored program concept	-	2.1.1	-
15	Effect of clock speed, cache size, number of cores	3.4.5.b	-	1.1.1.d
16	How data is passed through registers	-	3.1.2	-
17	Purpose of embedded systems	3.4.5.j	3.1.3	1.1.1.e
18	Examples of embedded systems	3.4.5.j	3.1.3	1.1.1.e
19	Purpose of main memory	3.4.5.a	3.1.1	1.2.1.a
20	Difference between RAM and ROM	3.4.5.e	-	1.2.1.b
21	Purpose of RAM	3.4.5.d	3.1.1	1.2.1.d
22	Purpose of ROM	3.4.5.d	-	1.2.1.c
23	How virtual memory works	-	-	1.2.1.e
24	Purpose of secondary storage	3.4.5.f	3.1.2	1.2.2.a
25	Difference between primary and secondary storage	3.4.5.e	-	-
26	Optical storage	3.4.5.g	3.1.2	1.2.2.b
27	Magnetic storage	3.4.5.g	3.1.2	1.2.2.b
28	Solid state storage	3.4.5.g	3.1.2	1.2.2.b
29	How storage methods work	3.4.5.g	3.1.2	-
30	Cloud storage	3.4.5.h	-	*(1.3.1.e)*
31	Cloud storage vs local storage	3.4.5.i	-	*(1.3.1.e)*
32	Selecting a suitable storage device	-	-	1.2.2.c
33	Advantages and disadvantages of storage devices	3.4.5.g	-	1.2.2.d
34	Bit	3.3.3.a	2.3.1	1.2.3.a
35	Nibble	-	2.3.1	1.2.3.a
36	Byte	3.3.3.a	2.3.1	1.2.3.a
37	kB – TB	3.3.3.b	-	1.2.3.a
38	PB	-	-	1.2.3.a

Number	Topic	AQA	Edexcel	OCR
39	Kibibyte (KiB) – tebibyte (TiB)	-	2.3.1	-
40	Number bases	3.3.1.a	*(2.1.3)*	*(1.2.4.a)*
41	Binary representation	3.3.1.b	*(2.1.3)*	*(1.2.4.a)*
42	Hexadecimal representation	3.3.2.b	*(2.1.6)*	*(1.2.4.c)*
43	Purpose of binary format	3.3.1.b	2.1.1	1.2.3.b
44	Calculate states represented by a binary bit pattern	-	2.1.1	-
45	Purpose of hexadecimal	3.3.1.c	2.1.6	-
46	Calculate text file size	3.3.8.c	2.3.1	1.2.3.c
47	Unsigned integers using two's complement	-	2.1.2	-
48	Denary to binary conversion	3.3.2.c	2.1.3	1.2.4.a
49	Binary to denary conversion	3.3.2.c	2.1.3	1.2.4.a
50	Signed binary/denary conversion	-	2.1.3	-
51	Denary to hexadecimal conversion	3.3.2.c	-	1.2.4.c
52	Hexadecimal to denary conversion	3.3.2.c	-	1.2.4.c
53	Binary to hexadecimal conversion	3.3.2.c	2.1.6	1.2.4.d
54	Hexadecimal to binary conversion	3.3.2.c	2.1.6	1.2.4.d
55	Binary addition	3.3.4.a	2.1.4	1.2.4.b
56	Logical binary shifts	3.3.4.b	2.1.4	1.2.4.e
57	Need for binary shifts	3.3.4.c	-	-
58	Arithmetic binary shifts	-	2.1.4	-
59	Overflow	-	2.1.5	1.2.4.b
60	Character codes are binary	-	2.3.1	1.2.4.f
61	Character set	3.3.5.a	*(2.2.1)*	1.2.4.g
62	7-bit ASCII	3.3.5.a	2.3.1	1.2.4.h
63	Extended ASCII	-	-	*(1.2.4.h)*
64	Unicode	3.3.5.a	-	1.2.4.h
65	Character sets are a sequence	3.3.5.b	2.2.1	1.2.4.g
66	ASCII vs Unicode	3.3.5.c	2.2.1	1.2.4.h
67	Understanding of pixels	3.3.6.a	2.2.2	1.2.4.i
68	Image size / resolution	3.3.6.b	2.2.2	*(1.2.4.k)*
69	Colour depth	3.3.6.b	2.2.2	*(1.2.4.k)*
70	How a bitmap is represented	3.3.6.c	2.2.2	1.2.4.i
71	Metadata	-	-	1.2.4.j
72	Effect of resolution and colour depth	3.3.6.d	2.2.4	1.2.4.k
73	Calculate image file size	3.3.6.e	2.3.1	1.2.3.c
74	Convert binary to image	3.3.6.f	2.2.2	-
75	Convert image to binary	3.3.6.g	-	-
76	Need for analogue to digital conversion	3.3.7.a	*(2.2.3)*	1.2.4.l
77	Sampling	3.3.7.b	2.2.3	1.2.4.l
78	Effect of sample rate, duration, bit depth	3.3.7.c	2.2.4	1.2.4.m
79	Calculate sound file size	3.3.7.d	2.3.1	1.2.3.c
80	Purpose of compression	3.3.8.a	2.3.2	1.2.5.a
81	Lossy compression	*(3.3.8.a)*	2.3.2	1.2.5.b

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82	Lossless compression	*(3.3.8.a)*	2.3.2	1.2.5.b
83	Interpret Huffman trees	3.3.8.b	-	-
84	Calculate Huffman storage	3.3.8.c	-	-
85	Understand run length encoding (RLE)	3.3.8.d	-	-
86	Represent data using RLE	3.3.8.e	-	-
87	Truth Tables	3.4.2.a	1.3.1	2.4.1.b
88	Construct truth tables for logic circuits	3.4.2.b	1.3.1	2.4.1.d
89	Interpret results of truth tables	3.4.2.b	1.3.1	-
90	Create/modify/interpret logic circuit diagrams	3.4.2.c	-	2.4.1.a
91	Create / interpret Boolean expressions	3.4.2.d	-	2.4.1.c
92	Create Boolean expression for a logic circuit	3.4.2.e	-	-
93	Create logic circuit from a Boolean expression	3.4.2.e	-	2.4.1.d
94	Systems software	3.4.3.a	*(3.2.2)*	*(1.5.2.b)*
95	Applications software	3.4.3.a	-	-
96	Operating system functions	3.4.3.b	3.2.1	1.5.1.a
97	Utility programs	3.4.3.a	3.2.2	1.5.2.a/b
98	High-level vs low-level languages	3.4.4.a	3.3.1	2.5.1.a
99	Machine code and assembly code	3.4.4.b	*(3.3.1)*	-
100	Purpose of translation	3.4.4.c	*(3.3.2)*	2.5.1.b
101	Advantages and disadvantages of low-level / high-level	3.4.4.d	*(3.3.1)*	-
102	Compilers & interpreters	3.4.4.e	3.3.1	2.5.1.c
103	Assemblers	3.4.4.e	-	-
104	Integrated Development Environment (IDE)	-	-	2.5.2.a
105	Network purpose	3.5.1.a	4.1.1	-
106	Advantages and disadvantages of networks	3.5.1.a	-	-
107	Personal Area Network	3.5.1.b	-	-
108	LAN and WAN	3.5.1.b	4.1.2	1.3.1.a
109	Wired and wireless advantages & disadvantages	3.5.1.c	4.1.4	1.3.2.a
110	Star topology	3.5.1.d	4.1.8	1.3.1.f
111	Bus topology	3.5.1.d	4.1.8	-
112	Mesh topology	-	4.1.8	1.3.1.f
113	Factors affecting network performance	3.5.1.c	4.1.4	1.3.1.b
114	Network hardware	-	-	1.3.1.d
115	Client-server and peer-to-peer	-	-	1.3.1.c
116	Internet structure	-	4.1.3	1.3.1.e
117	Purpose of protocols / standards	3.5.1.e	4.1.6	1.3.2.d
118	Protocols	3.5.1.f	4.1.6	1.3.2.e
119	Measuring network speeds	-	4.1.5	-
120	Need for network security	3.5.1.g	4.2.1	-
121	TCP/IP model	3.5.1.i	4.1.7	-
122	Concept of layers	-	-	1.3.2.f
123	IP and MAC addressing	*(3.5.1.f)*	*(4.1.6)*	1.3.2.c
124	MAC address filtering	3.5.1.h	-	-

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125	Purpose of cyber security	3.6.1.a	4.2.1	-
126	Encryption	3.5.1.h	5.3.2	1.3.2.b, 1.4.2.a
127	Access control / passwords / authentication	3.5.1.h, *(3.6.2.a)*	4.2.1	1.4.2.a
128	Firewall	3.5.1.h	4.2.1	1.4.2.a
129	Anti-malware	3.6.2.2	5.3.1/2	1.4.2.a
130	Physical security	-	4.2.1	1.4.2.a
131	Penetration testing / ethical hacking	3.6.2.b	4.2.1	1.4.2.a
132	Audit trails	-	3.2.3	-
133	Code reviews	-	3.2.3	-
134	Biometric security	3.6.3.a	*(3.2.1)*	-
135	CAPTCHA	3.6.3.a	-	-
136	2FA by email	3.6.3.a	-	-
137	Automatic software updates	3.6.3.a	-	-
138	Acceptable use policy	-	5.3.2	-
139	Backup and recovery	-	5.3.2	-
140	Social engineering	3.6.2.1	5.3.1	1.4.1.a
141	Pharming	3.6.2.a	-	-
142	Malware	3.6.2.2	5.3.1	1.4.1.a
143	Brute force attacks	-	-	1.4.1.a
144	Denial of service attacks	-	-	1.4.1.a
145	Data interception and theft (hacking)	3.8.1.a	-	1.4.1.a
146	SQL injection	-	-	1.4.1.a
147	Weak passwords	3.6.2.a	-	-
148	Misconfigured access rights	3.6.2.a	-	-
149	Removable media	3.6.2.a	-	-
150	Unpatched or out of date software	3.6.2.a	5.3.1	-
151	Concept of a database	3.7.1.a	-	*(2.2.3.d)*
152	Concept of a relational database	3.7.1.b	-	-
153	Relational database structure	3.7.1.c	-	-
154	Data redundancy and inconsistency	3.7.1.c	-	-
155	SQL Select	3.7.2.a	-	2.2.3.d
156	SQL Insert	3.7.2.b	-	-
157	SQL Update	3.7.2.c	-	-
158	SQL Delete	3.7.2.c	-	-
159	Environmental issues	3.8.1.a	5.1.1	1.6.1.a
160	Ethical issues 1	3.8.1.a	5.2.1/2/3	1.6.1.a
161	Legal issues	3.8.1.a	5.2.1/2/3	1.6.1.a
162	Cultural issues	-	-	1.6.1.a
163	Privacy issues	3.8.1.a	5.2.1	1.6.1.a
164	Data Protection Act	*(3.8.1.a)*	*(5.2.1)*	1.6.1.b
165	Computer Misuse Act	*(3.8.1.a)*	*(5.2.1)*	1.6.1.b
166	Copyright, Designs and Patents Act	-	*(5.2.3)*	1.6.1.b

Number	Topic	AQA	Edexcel	OCR
167	Software licences	-	5.2.3	1.6.1.b
168	Abstraction	3.1.1.c	1.1.1, 6.1.1	2.1.1.a
169	Decomposition	3.1.1.b	1.1.1, 6.1.1	2.1.1.a
170	Concept of an algorithm	3.1.1.a	*(1.2.1)*	*(2.1.2.c)*
171	Algorithmic thinking	3.1.1.d	1.2.1	2.1.1.a
172	Identify inputs, processes, outputs for algorithms	3.1.1.e	1.2.1	2.1.2.a
173	Structure diagrams	-	-	2.1.2.b
174	Pseudocode / flowcharts / high level programming	3.1.1.d	1.2.1	2.1.2.c
175	Multiple algorithms to solve same problem	3.1.2.a	-	-
176	Compare efficiency of algorithms	3.1.2.b	1.2.7, 6.1.6	-
177	Trace tables	3.1.1.f	1.2.4	2.1.2.e
178	Linear search	3.1.3.a	1.2.6	2.1.3.a
179	Binary search	3.1.3.b	1.2.6	2.1.3.a
180	Compare and contrast linear & binary search	3.1.3.c	1.2.6, *(1.2.7), (6.1.6)*	-
181	Merge sort	3.1.4.a	1.2.6	2.1.3.b
182	Bubble sort	3.1.4.b	1.2.6	2.1.3.b
183	Insertion sort	-	-	2.1.3.b
184	Compare and contrast merge & bubble sort	3.1.4.c	1.2.6, *(1.2.7), (6.1.6)*	-
185	Concept of data types	3.2.1.a	6.3.1	2.2.2.a
186	Use of data types	3.2.1.a	6.3.1	2.2.2.a
187	Variable declaration and assignment & constants	3.2.2.a	1.2.2, 6.2.1, 6.3.2	2.2.1.a
188	Sequence, selection & iteration	3.2.2.a	1.2.1 6.2.1/2	2.2.1.b
189	Iteration through data structures	*(synoptic)*	1.2.1, 6.2.2	*(synoptic)*
190	Single entry/exit points for code blocks	-	6.2.2	-
191	Count-controlled and condition-controlled loops	3.2.2.b	1.2.1 6.2.2	2.2.1.b
192	Nested selection and iteration	3.2.2.c	-	-
193	Arithmetic operators	3.2.3.a	1.2.3, 6.5.1	2.2.1.c
194	Boolean operators	3.2.5.a	1.2.3, 6.5.3	2.2.1.d
195	Relational operators	3.2.4.a	1.2.3, 6.5.2	*(2.2.1.b)*
196	One and two-dimensional arrays	3.2.6.a/b	1.2.2, 6.3.1	2.2.3.e
197	Records as a data structure	3.2.6.c	1.2.2, 6.3.1	2.2.3.c
198	String manipulation	3.2.8.a	6.3.3	2.2.3.a
199	Obtain input from the user	3.2.7.a	6.4.1	2.2.1.a
200	Output data to a display	3.2.7.b	*(6.4.1)*	2.2.1.a
201	File handling	-	6.4.2	2.2.3.b
202	Comma separated files	-	6.4.2	-
203	Programming for validation	3.2.11.a	6.4.3	2.3.1.b
204	Programming for authentication	3.2.11.b	6.4.4	2.3.1.a
205	Anticipating misuse	-	-	2.3.1.a
206	Random number generation	3.2.9.a	-	2.2.3.g
207	Concept of subroutines	3.2.10.a	6.6.1	2.2.3.f

Number	Topic	AQA	Edexcel	OCR
208	Advantages of subroutines	3.2.10.b	1.1.2	*(2.2.3.f)*
209	Use of parameters	3.2.10.c	6.6.2	*(2.2.3.f)*
210	Functions with return values	3.2.10.d	6.6.2	*(2.2.3.f)*
211	Local /global variables	3.2.10.e	6.6.3	*(ERL)*
212	Advantages of local variables	3.2.10.f	-	-
213	Describe structured approach to programming	3.2.10.g	-	-
214	Advantages of the structured approach	3.2.10.h	-	-
215	Meaningful identifier names	3.2.2.d	6.1.4	2.3.1.c
216	Other methods for maintainable code	-	6.1.4	2.3.1.c
217	Purpose of testing	3.2.11.c	*(1.2.7), (6.1.6)*	2.3.2.a
218	Correct errors	3.2.11.c	1.2.5, 6.1.5	2.3.2.e
219	Types of test data	3.2.11.d	*(6.1.6)*	2.3.2.d
220	Choose suitable test data	3.2.11.e	*(1.2.7), (6.1.6)*	2.3.2.d
221	Syntax errors	3.2.11.f	1.2.5, 6.1.5	2.3.2.c
222	Logic errors	3.2.11.f	1.2.5, 6.1.5	2.3.2.c
223	Runtime errors	-	1.2.5, 6.1.5	-
224	Identify and categorise errors 1	3.2.11.g	1.2.5	2.1.2.c/d
225	Iterative vs final/terminal testing	-	-	2.3.2.b
226	Read, write, analyse & refine programs	*(PT)*	6.1.2	*(PT)*
227	Convert algorithms into programs	-	6.1.3	-

* brackets denote the content is implicitly required rather than explicitly stated

* “synoptic” denotes that the content could be tested by combining different elements of the specification

* “pseudo”, “PLS”, “ERL” denotes that the concept is included within the pseudocode (AQA) / Programming Language Subset (Edexcel – Python) / Exam Reference Language (OCR)

* “PT” denotes coverage in the programming task(s)