Student responses with examiner commentary template

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Student responses with examiner commentary

A-level Computer Science 7516
7516D

For teaching from September 2015]

For assessment from Summer 2016]

Introduction

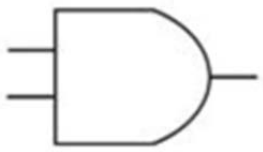
These resources should be used in conjunction with the Specimen Assessment material (7516D) from the AQA website. This document illustrates how examiners intend to apply the mark scheme in live papers. While every attempt has been made to show a range of student responses examiners have used responses, and subsequent comments, which will provide teachers with the best opportunity to understand the application of the mark scheme. Examples given in this commentary use Python3.

Question Number	Student answer	Marks awarded	Marks available	Commentary
1.1	23	1	1	The student has clearly written a number from the set of natural numbers.
1.2	3.14	0	1	The student has not written an irrational number. Even though this is an approximation for pi this answer is not enough to be awarded the mark.
2.1	D3 in binary is 11010110 The binary represents 128+64+16+4+2 214	2	2	One mark for working showing the conversion of hex to binary and then one mark for correct final answer of 214
2.2	1001.0110	2	2	Student has correctly answered the question and the inclusion of the binary point is ignored.
2.3	10111100	1	2	Student has not completed this correctly but picks up one mark for the binary code starting with a one (which identifies a negative number)
2.4	00101011	0	1	Student has completed most of the addition correctly but has made one mistake by not running across a carry from the addition of 1 and 1. As a one mark question they gain no credit.
2.5	There is nothing wrong with the calculation.	0	1	This answer is not correct.
3.1	A character code is used for determining a keyboard layout.	0	1	This answer is not correct.
3.2	<table><tr><th>Character</th><th>Binary form of ASCII</th></tr><tr><td>b</td><td>1100010</td></tr><tr><td>e</td><td>1100101</td></tr></table>	2	2	The student has correctly completed this table.

3.3	1111111	0	1	The student appears to have performed a bitwise OR operation.
4.1	1 : nobody transmitting 2 : no acknowledgement received 3 : acknowledgement received 4 : random	4	4	The student will gain all 4 marks for these answers. The idea of 'nobody transmitting' could be improved by talking about a node. The idea of 'random' is enough to gain the mark but would be better written as 'random period'
4.2	A broadcast SSID announces the presence of a network and allows clients to connect. This is a security concern as hackers could attempt to connect to your network.	1	3	The student has identified the security concern but has not described what an SSID actually is. They have also not provided enough detail in explaining how clients connect.
4.3	The coffee shop might limit the speed given to each customer. There will be more people in a coffee shop than at home.	1	2	The student has shown good understanding about the idea of limiting the speed given to each customer. Their second point is not described very well and would not secure a mark. To improve the answer needs to be applied to the context of people trying to connect to the access point.
5.1	Encryption involves turning plain text into cipher text via the use of a mathematical routine so that it cannot be understood.	2	2	The student has made a good attempt at explaining encryption and gains both marks. Their answer is missing the role of the receiver.
5.2	By making source code available it can be inspected by anybody. Open source software is free to download.	0	2	The student has only repeated the question stem for their first point and this will gain no credit. The second point is too general and not linked back to the context of the question.
5.3	Open source software is usually written by volunteers who might not have time to bug hunt fully.	1	1	The student has put across the point that open source software programmers may be volunteers and this is a valid point on the mark scheme.

5.4	Reason for: So they can read any message and monitor anybody. Reason against: So messages can be kept secret.	0	2	The answers provided are too general to gain any marks. To improve the student needs to identify why a Government might wish to read a message.
6.1	Running programs are stored in RAM and the processor fetches and executes instructions one by one.	2	2	The student has provided two points that are both credit worthy.
6.2	The CIR holds the current instruction which is to be executed by the processor by being split into opcode and operand. Before executing the instruction is fetched from the memory using the MAR and MBR with the PC goes up by 1. The status register keeps an eye on things going on in the computer.	1	6	The student has worked down the list of registers given in the question rather than actually putting them into the correct order for the fetch execute cycle. They are therefore being marked against level 1 from the mark scheme. As only a few points are made they will pick up 1 mark.
6.3	Low level language is machine code.	0	1	The student has given an example of low-level language rather than explain the term.
6.4	The instruction to be executed.	1	1	This is just enough to secure the mark. The answer could be improved by identifying that 'it represents the instruction to be executed'.
6.5	mov r0, #2 Immediate addressing supplies a value as part of the instruction - the number 2 above will be moved to r0.	2	2	The student has provided an example first and then explained this well linking their answer to the example instruction.

6.6	cmp r1, #5
	beq
	mov r2, #10
		2	4	The student has made an attempt at writing the assembly code. They have identified that a comparison needs to be made and put in a branch but not added a label. They will secure the mark for design and pick up one further mark for moving 10 to R2.
				Even though they compare R1 against 5 the branch is not correct due to the missing label part and its being BEQ rather than BNE. It is clear that the student has picked up some aspects from the information in Table 3 but a lack of

				understanding is also evident.
7	A car spraying robot does not drive on the open road and all of movements are always in the same place. The car spraying robot runs a simple program. Car control would need radar sensors to identify other cars on the road so it can be kept a safe distance away. GPS could be used to identify where the car is and where it is going to so it can plan a route.	2	9	The student has made an attempt at answering this question but it does not have the required amount of depth and so can only get marks from the Level 1 band They have identified points about the simplistic nature of car painting robots. The student has tried to think about the sensors listed in the question but has not particularly described the processing that would occur and why.
8.1	There might be a lot of metal and magnets in an aeroplane that could affect a hard disk drives data. A hard disk drive might not survive a crash due to its moving parts.	2	2	The student has made two valid points. The first point could be improved by adding in the idea of corrupting data rather than just affecting,
8.2	5760000 / 1024 = 5625	2	3	The student has provided the correct final answer and shown some working. They have missed off how the first figure was arrived at.
8.3	A sample rate of 8000hz means that any sound over 4000hz would not be measured well.	1	2	The student has linked the idea of 8000hz to 4000hz as a means of storing good quality sound. They have missed off the link to Nyquist's theorem which would be expected to gain full marks as this is a 2 mark question.
9.1	<table><tr><th>A</th><th>B</th><th>Q</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td></tr></table> 	2	2	The student has completed the table correctly and drawn the correct symbol for the AND gate.

9.2	A.B(A + B) A.B.A + A.B.B A.B + A.B A.B	3	3	The student has clearly worked through this simplifcation and provided their working. The steps follow on and lead to the final answer which is correct. Students should be advised to be careful to perform only one step per working line so that it is clear to an examiner what they have done.
9.3	X + X (not Y) + XY X(1 + not Y + Y) X	2	3	The student has jumped ahead this time and perhaps expanded the brackets and simplified a bit all in one go. However, they still gain one mark for their working and have the correct final answer. In their working it is hard to tell if they have performed correct method in their first line due to the combining of three steps into one (X.X simplified to X, Y.(NOT Y) simplified to 0, and X + X.(NOT Y) + X.Y + 0 simplified to X + X.(NOT Y) + X.Y)
10.1	Version B	1	1	The student has correctly answered the question.
10.2	A compiler works on the whole program but an interpreter runs line by line. A compiler creates an executable but an interpreter doesn't.	1	2	The idea of compiler working on a program is not enough to secure credit. We need the idea of translating a program. The concept of a compiler producing an executable is creditworthy as this maps to the idea of object code and matches the first point on the mark scheme.
10.3	Intermediate code is produced before the machine code. It might be the final output as the compiler has detected an error in the program.	0	2	This student has not shown any understanding of intermediate code and gains no credit.

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