

**AQA Computer Science A-Level**  
**4.3.5 Sorting algorithms**  
Past Paper Mark Schemes

## Additional Spec Qs Paper 1

02	3	<p><b>All marks AO2 (apply)</b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th style="text-align: center;">Call number</th> <th style="text-align: center;">S</th> <th style="text-align: center;">E</th> <th style="text-align: center;">M</th> <th style="text-align: center;">List returned</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">5</td><td style="text-align: center;">3</td><td></td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">1</td><td style="text-align: center;">3</td><td style="text-align: center;">2</td><td></td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">1</td><td></td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td></td><td style="text-align: center;">[6]</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">1</td><td></td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td></td><td style="text-align: center;">[3]</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">1</td><td style="text-align: center;">[6, 3]</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">1</td><td style="text-align: center;">3</td><td style="text-align: center;">2</td><td></td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td></td><td style="text-align: center;">[4]</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">1</td><td style="text-align: center;">3</td><td style="text-align: center;">2</td><td style="text-align: center;">[6, 4, 3]</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">5</td><td style="text-align: center;">3</td><td></td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td><td style="text-align: center;">4</td><td></td></tr> <tr><td style="text-align: center;">8</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td></td><td style="text-align: center;">[8]</td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td><td style="text-align: center;">4</td><td></td></tr> <tr><td style="text-align: center;">9</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td></td><td style="text-align: center;">[5]</td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td><td style="text-align: center;">4</td><td style="text-align: center;">[8, 5]</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">5</td><td style="text-align: center;">3</td><td style="text-align: center;">[8, 6, 5, 4, 3]</td></tr> </tbody> </table> <p><b>Mark as follows:</b>  <b>1 mark:</b> Correct list returned by call number 3;  <b>1 mark:</b> Correct lists returned by call number 6-9;  <b>1 mark:</b> Correct list returned by call number 1;  <b>1 mark:</b> S, M, E given correct values for call number 6;  <b>1 mark:</b> S, M, E given correct values for call number 7;  <b>1 mark:</b> S, M, E given correct values for call number 8-9;</p> <p><b>Info for examiner:</b> Ignore missing values for S, E, M after the first time a particular call number appears in the table.</p>	Call number	S	E	M	List returned	1	1	5	3		2	1	3	2		3	1	2	1		4	1	1		[6]	3	1	2	1		5	2	2		[3]	3	1	2	1	[6, 3]	2	1	3	2		6	3	3		[4]	2	1	3	2	[6, 4, 3]	1	1	5	3		7	4	5	4		8	4	4		[8]	7	4	5	4		9	5	5		[5]	7	4	5	4	[8, 5]	1	1	5	3	[8, 6, 5, 4, 3]	6
Call number	S	E	M	List returned																																																																																									
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02	4	<p><b>Mark is for AO2 (analyse)</b></p> <p>nlog n</p> <p>A. <math>O(n \log n)</math>  A. <math>O(n \log_2 n)</math>  A. <math>n \log_2 n</math>  <b>NE.</b> <math>\log(n)</math></p>	1
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02	5	<p><b>All marks AO1 (knowledge)</b></p> <p>Return address; Parameters; Local variables; Return value;</p> <p><b>MAX 2</b></p>	2
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02	6	<p><b>All marks AO2 (analyse)</b></p> <p>Because there will be four recursive calls to MergeSort (1, 2, 3, 4) and (1, 2, 3, 5); there will also be three recursive calls to MergeSort (1, 2, 3) and one call to Merge.</p>	2
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### June 2011 Comp 1

18	<p>18, 23, 21, 36, 40, 45, 58, 59</p> <p><b>Mark as follows:</b> 18 in the first place; 23 and 21 in correct order and in the second and third places; 21 and 36 in the correct order and in the third and fourth places; 40, 45, 58 and 59 in the correct order and in the last four places;</p> <p><b>A.</b> Table 3 instead of Table 2 as long as the bottom cell of each of the scores column is correct (I. any working out)</p>	4
19	<p>Bubble sort; <b>NE.</b> sort</p>	1