AQA Computer Science A-Level 4.4.1 Abstraction and automation Past Paper Mark Schemes

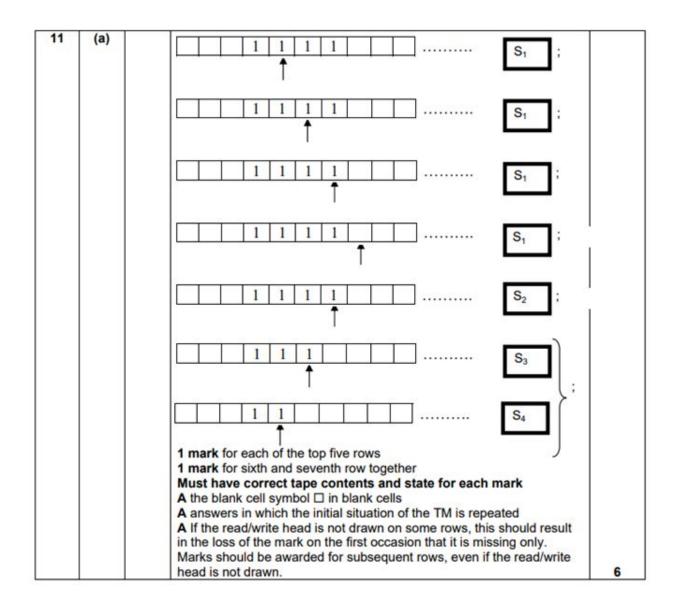
Additional Specimen AS Paper 1

02	1	All marks	AO2 (app	oly)		3			
		A	В	TEMP	OUTPUT				
		100	60	60					
			40						
		60		40					
		10	20						
		40	0	20		_			
		20	0		The value is 20	-			
					The value is 20	-			
		One mark - first bordered area of table completed correctly; One mark - second bordered area of table completed correctly; One mark - correct output in last row of table; I. Relative positions of variables in each bordered area							
02	2	All marks	AO2 (app	oly)		1			
				.i // 00	0.				
		greatest	common ar	visor // GC	D;				
01	1					1			
01	•	Mark is fo	or AO2 (ap	ply)		,			
		ъ.							
	-	D;							
01	2	Mark is fo	or AO2 (ap	ply)		1			
		A;							
01	1					1			
01	•	Mark is fo	or AO2 (ap	ply)		,			
	8	D;							
01	2	Mark is fo	or AO2 (ap	pply)		1			
The con-			are constant a	and the second					
		A;							

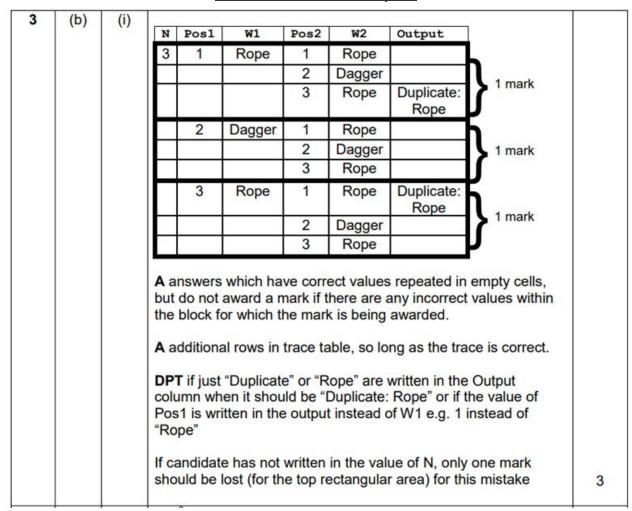
03	1	Marks are for AO2 (analysis) The values are being stored as string;	2
8	s 5	the string 007 is (alphabetically) less than 06;	
03	2	Mark is for AO3 (programming)	2
		IF Value1 < Value2 THEN OUTPUT "Value 2 is larger" ELSE IF Value1 = Value2 THEN OUTPUT "Value1 and Value2 are the same" ELSE OUTPUT "Value 1 is larger" ENDIF	
		One mark - addition of check for equality and output message; One mark - statement works correctly;	

<u>June 2011 Comp 3</u>

5	(c)	String Pos	Token	Integer Val	Op1	Op2	Result	Stack	
		0	•	•	-	-	-		
		1	6	6				<u>6</u>	
		2	4	4				4 6	
		3	+		6	4	10	10	
		4	3	3				3 10	
		5	2	2				2 3 10	
		6	+		3	2	5	5 10	
		7			10	5	50	50	
			ows 4 and ows 6 and correct fina p1 and Op	5 together 7 together					
		incorrectly e	entered pre	evious values					
		I values in e	mpty cells	, even if they	are inc	orrect.			(



June 2012 Comp 3



0	(e)						Di	sc	ov	er	ed	l		Co	_	le		_		
		Call	V	U	En dV	1	2	3	4	5	6	7	1	_	3	_	5	6	7	F
			-	-	7	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
		DFS(1,7)	1	2	7	T	F	F	F	F	F	F	F	F	F	F	F	F	F	F
		DFS(2,7)	2	1	7	T	T	F	F	F	F	F	F	F	F	F	F	F	F	F
				3	7	T	T	F	F	F	F	F	F	F	F	F	F	F	F	F
		DFS(3,7)	3	2	7	Т	T	T	F	F	F	F	F	F	T	F	F	F	F	F
		DFS(2,7)	2	4	7	Т	T	T	F	F	F	F	F	F	T	F	F	F	F	F
		DFS(4,7)	4	2	7	Т	T	T	T	F	F	F	F	F	Т	F	F	F	F	F
				5	7	Т	T	T	Т	F	F	F	F	F	T	F	F	F	F	F
		DFS(5,7)	5	4	7	Т	Т	T	T	T	F	F	F	F	T	F	F	F	F	F
				6	7	Т	T	T	T	T	F	F	F	F	T	F	F	F	F	F
		DFS(6,7)	6	5	7	Т	T	Т	T	Τ	T	F	F	F	T	F	F	T	F	F
		DFS(5,7)	5	7	7	T	T	T	T	T	T	F	F	F	T	F	F	T	F	F
		DFS(7,7)	7	5	7	Т	T	T	T	Т	T	T	F	F	T	F	F	T	T	T
		DFS(5,7)	5	_	7	Т	Т	Т	Т	Т	Т	Т	F	F	T	F	T	T	Т	Т
		DFS(4,7)	4	-	7	Т	T	T	Т	Т	Т	Т	F	F	T	T	T	Т	Т	T
		DFS(2,7)	2	-	7	Т	Т	Т	Т	T	Т	Т	F	T	Т	Т	Т	T	Т	T
		DFS(1,7)	1	_	7	Т	Т	Т	Т	т	т	Т	Т	Т	Т	т	Т	Т	Т	Т

June 2016 AS Paper 1

01	1	Mark is for AO2 (apply)	1
		B;	
01	2	Mark is for AO2 (apply)	1
		C;	

	ItemsCount	NewItemsCount	LoopA	Done	LoopB		NewI	tems	
						[0]	[1]	[2]	[3
	4	1				12	0	0	0
		2	1	False	0		25		
			2	False	0				
				True	1				
			3	False	0				
		3			1			53	
	-								
								-	
							1		\vdash
	2. LoopB is s no further and no further and no further and no furthers. NewItems R. if NewItems	nning over the value tet to 0 then changes; becoming 12, 25 not changing duritems has not change having value 12, without trailing ze	es to 1 the state of the state	the end o DA value 2 viously	ges to 0 to f LoopA	value		es to 1	and
	A. NewItems	without repeated	values fo	r 12 and	25				

04	2	Mark is for AO2 (apply)	1
		NewItems contains an array/list of the unique items from the Items array/list; Remove duplicate items from an array/list;	
		Max 1	

June 2017 AS Paper 1

1	All marks	AO2 (apply)								
	Count	HexString	Number	HexDigit	Value	Output				
	1	"A2"	0	"A"	10					
			10	"2"	2					
			162			162				
	2	"1G"	0	"1"	1					
			1	"G"	-1					
			15			15				
	 Mark as follows: Count running over the values 1, 2 with correct sequence of values for HexString ("A2", "1G"); The correct sequence of values in Number column (0, 10, 162, 0, 1, 15); The correct sequence of values in HexDigit column ("A", "2", "1", "G"); The correct sequence of values in Value column (10, 2, 1, -1); The correct sequence of values in Output column (162, 15); 									
	A. "1G" b	ng values in first to before "A2"								
	A. string values without quotes									

02	2 2	All marks for AO2 (analyse)	2
		 invalid character produces value -1 from subroutine; -1 should not be used to calculate // deal with -1 seperately // using -1 gives a misleading result; final output should be -1 / error message; MAX 2	

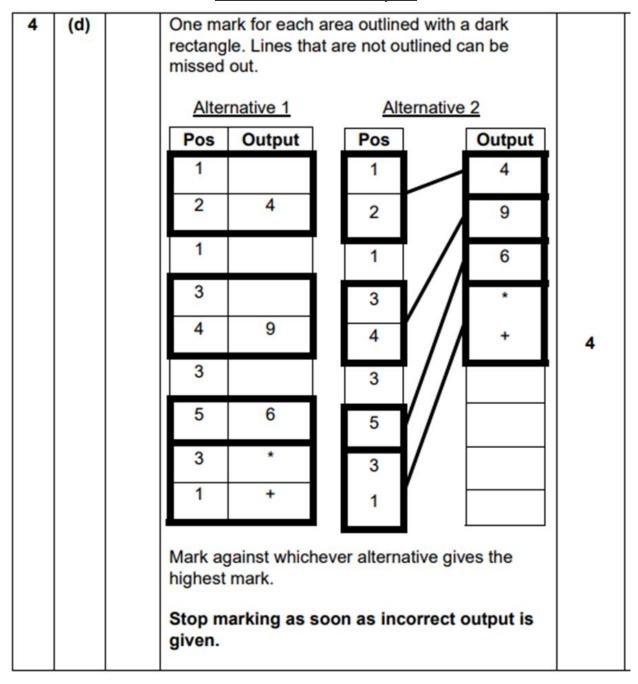
<u>June 2017 Paper 1</u>

04	1	Mar	k is for AO1 (knowledge)		1					
		A su	ubroutine that calls itself;							
04	2	Whe	ck is for AO1 (understanding) en target equals node // (When target does de = target;	not equal node and) node is a leaf //	1					
04	3	Marks are for AO2 (apply)								
			Function Call	Output						
			TreeSearch (Olivia, Norbert)	(Visited) Norbert;						
			TreeSearch(Olivia, Phil);	(Visited) Phil;						
		MAX 2 if any errors eg additional outputs / function calls after output of Phil I. minor spelling and punctuation errors								

June 2011 Comp 1

18	18, 23, 21, 36, 40, 45, 58, 59	
	Mark as follows: 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;	
	A. Table 3 instead of Table 2 as long as the bottom cell of each of the scores column is correct (I. any working out)	4
19	Bubble sort; NE. sort	1

June 2013 Comp 3



4	(e)	Post-order; A. Depth-first A. Depth-first search as BOD TO. Depth-first pre/in-order	1
4	(f)	(4+9*6 in) Reverse Polish (Notation) // Postfix (Notation) // RPN;	1
	v	Specimen Paper 1	0
01	1	Mark is for AO2 (apply) 1 mark: B;	1
01	2	All marks AO2 (analyse)	2

Nathan was not killed with poison (rule a); therefore Peter was not in the kitchen (rule c); therefore Martin was not in the dining room (rule e); therefore Suzanne was in the dining room (rule b);

therefore Steve murdered Nathan (rule d).

1 mark: Any correct point from the list above;

1 mark: Any two further correct points from the list above;

Mark as follows:

03	4	All marks AO2 (apply)										6
	Cat								1			
		NoOfCats	A	В	C	1	2	3	4	5		
1		5				1						
1			2	1	1							
1				1	2							
1				2			2		2			
1			3	1	1		_					
1			_	1	2		_					
1			_	2			_		_			
1			⊢	1	3	_	<u> </u>	_	_	_		
1			-	2	-	_	<u> </u>	_	_			
1				3		_	-	3	_			
1			4	1	1	<u> </u>	-	-	<u> </u>			
1		I 	-	2	\vdash	-	⊢	_	-	_		
1		l 	-	3	\vdash	-	\vdash		1			
1		l 	5	1	1		-	\vdash	1			
		l 	3	2	1	_	\vdash		\vdash			
1		1		3	-		\vdash		-			
1			\vdash	4	\vdash	_	\vdash	\vdash				
1		l 	 	5	\vdash		\vdash	\vdash	-	1	1	
		-	_		_	_	_		_		·	
		2008 XXX 4000X										
1		Mark as follow										
1	1 mark: A is set the sequence indicated in the table; 1 mark: B is set the sequence indicated in the table; 1 mark: C is set the sequence indicated in the table; 1 mark: NoOfCats is set to 5, Cat[1] is set to 1;											
1												
1												
1												
1	1 mark: Cat[2] is set to 2 and Cat[3] is set to 3; 1 mark: Cat[4] is set to 1 and Cat[5] is set to 1; Info for examiner: Ignore the empty cells in the sequences - values of not need to be set in the rows indicated in the table.											
											;	
1												
1											uences - values do	
		not need to be s	et in	tile f	OWS	maic	ateo	mi tr	ie ta	Die.		
												1
03	5	Mark is for AO2 (analyse)										
		To work out which cats will travel together to the show //										
		To plan which cats will be in the van on which journey to the cat show //										
		To colour the vertices of a graph //										
		To create a decomposition of a graph;										
		Max 1										
		I IIIUA I										