Published

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Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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[Turn over

Question	Answer	Marks

1(a)(i)	Many correct answers, the identifier must be meaningful and appropriate size if present. These are examples only
	`ReactionTime [1:650], ReactionTime [0:649],`
	`ReactionTime [650], ReactionTime[649], ReactionTime[ ]`
		1

1(a)(ii)	Many correct answers, the identifier must be the same as part 1(a)(i) including appropriate size if present. These are examples only
	`ReactionTime [1:50], ReactionTime [0:49], ReactionTime [50],`
	`ReactionTime[49], ReactionTime[ ]`
		1

1(a)(iii)	Any **two** from: – can store multiple reaction times under a single identifier – reduces the number variables – arrays have an index which identifies each stored element – can use iteration to loop through an array – allows for more efficient programming – programs are easier to debug	2

1(b)	Any **three** from:
	
	– an effective loop to accept 650 records
	– prompt for **all three** inputs
	– within the loop reads **all three** INPUT values
	– storing input values in appropriate arrays
	
	Sample Answer.
	`FOR Counter ← 1 TO 650`
	`    OUTPUT ('Input House, Age and Reaction Time')`
	`    INPUT HouseArray [Counter], AgeArray [Counter],`
	`    ReactionTimeArray[Counter]`
	`NEXT`
		3

1(c)	1 mark for correct type of test data (max 3) …… 1 mark for appropriate example (max 3) <table><tr><td>Normal / Valid</td><td>12 / 13 / 14 / 15 / 16</td></tr><tr><td>Erroneous / Abnormal / Invalid</td><td>13.5 / Twelve / 9</td></tr><tr><td>Boundary (accepted) Boundary (rejected)</td><td>12 or 16 11 or 17</td></tr><tr><td>Extreme</td><td>12 or 16</td></tr></table>	6
1(d)	Any **five** from following explanations: – user input for House and Age – loop through the arrays – use selection statements to identity the elements that meet <u>both</u> criteria – maintain counter of elements (that met criteria of House and Age input) – maintain a sum of reaction times (that match criteria of House and Age input) – calculate the average from element counter and sum of reaction times – create appropriate output message – output message and average outside of loop	5

Question	Answer	Marks
1(e)	Any **two** from following explanations: – variable used to hold fastest time will have to initialised to a high value / variable used to hold **fastest** time will be given first record value – store array value in variable if reaction time less than current value in variable – store array value of age with the same index in a variable – Output age and fastest reaction time	**2**

Question	Answer	Marks
	Section B	

2	1 mark for each error identified **with** effective corrective action
	`01 Num18 = 0`
	`02 INPUT Age`
	`03 WHILE Age >= 0 DO`
	`04    IF Age >= 18 THEN`
	`05        Num18 = Num18 + Age`
	`06    END IF`
	`07 END WHILE`
	`08 PRINT Num18 – Age`
	
	Error – Line 04 or `IF Age >= 18` and Correction – `IF Age >18`
	
	Error – Line 05 or `Num18 =Num18 + Age` and Correction – `Num18 = Num18 + 1`
	
	Error – Line 08 or `PRINT Num18 – Age` and Correction – `PRINT Num18`
	
	Error – `INPUT Age` missing inside loop and Correction – Include `INPUT Age` after test and before exiting loop
		4

3	1 mark for each correctly completed element of the grid <table><tr><td>*Variable*</td><td>*Data Type*</td><td>*Appropriate Validation Check*</td></tr><tr><td>*EmployeeID*</td><td>String</td><td>Length Check / Presence Check / Format Check / Type check</td></tr><tr><td>*Manager*</td><td>Boolean</td><td>Type Check / Presence Check</td></tr><tr><td>*AnnualHoliday*</td><td>Integer</td><td>Type Check / Range Check / Presence Check</td></tr><tr><td>*PayGrade*</td><td>Char</td><td>Presence Check / Length Check / Type Check</td></tr></table>	**8**
4	1 mark for each correct column <table><tr><td>A</td><td>B</td><td>C</td><td>Output</td></tr><tr><td>4</td><td>4</td><td>4</td><td></td></tr><tr><td></td><td>8</td><td>3</td><td></td></tr><tr><td></td><td>12</td><td>2</td><td></td></tr><tr><td></td><td>16</td><td>1</td><td>16</td></tr><tr><td>3</td><td>3</td><td>3</td><td></td></tr><tr><td></td><td>6</td><td>2</td><td></td></tr><tr><td></td><td>9</td><td>1</td><td>9</td></tr><tr><td>–1</td><td></td><td></td><td>Exit</td></tr></table>	**4**

Question	Answer	Marks

5(a)	– initialising counter outside the loop
	– updating counter inside loop
	– suitable exit value at start of loop
	– correct use of `WHILE … DO … ENDWHILE`
	
	Example:
	
	`INPUT Num`
	`Counter ← 1`
	`WHILE Counter <= 12 DO`
	`    Num ← Num * Counter`
	`    A [Counter] ← Num`
	`    Counter ← Counter + 1`
	`ENDWHILE`
		4

5(b)	– `WHILE` has criteria check at start / pre-test – may never run – `REPEAT UNTIL` has criteria check at end / post-test – will always run at least once	**4**
6(a)	Alan Swales Chantel Law • Correct data • Correct order	**2**
6(b)	(table below)	**4**

Field:	Device ID	Device Type	Purchase Date	Purchase Price ($)
Table:	DEVICE	DEVICE	DEVICE	DEVICE
Sort:				
Show:	☑	☑	☐	☐
Criteria:		"Desktop"	<#31/12/2016#	
or:		"Desktop"		<1000

1 mark for each correct column