Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

COMPUTER SCIENCE **0478/23**

Paper 2 **October/November 2017**

MARK SCHEME

Maximum Mark: 50

Published

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Question	Answer	Marks

1(a)(i)	1 mark per bullet:
	
	• At least one array declaration
	• At least one array has an appropriate name
	
	• All arrays with appropriate names
	
	Many correct answers, they must be meaningful. These are examples only.
	
	`Array_2Seater[ ]`
	`Array_4Seater[ ]`
	`Array_Historic[ ]`
		3

1(a)(ii)	1 mark per bullet: • Name of variable • Purpose of variable • Name of constant • Purpose of constant Many correct answers, they must be meaningful. These are examples only. Variable `NumFlights` to store the number of flights in a day Constant `FlightCost2Seat30` to store the cost of a 30 minute flight in a 2 seater plane	**4**

Question	Answer	Marks

1(b)	Any **five** from:
	
	• Prompt for plane
	• Input plane
	• Prompt for another input length of flight along with the input.
	• Attempt at calculation of maximum number of flights in a day
	• Using correct values for maximum number of flights (from calculation or otherwise)
	• Calculation/determination of cost of a single flight for selected plane and duration
	• Calculation of income that can be generated for one combination of plane and flight
	• Output of total possible income for one combination of plane and flight with message(s)
	
	Algorithm example:
	
	`OUTPUT "Please Enter Type of Plane"`
	`OUTPUT "1: 2 Seater"`
	`OUTPUT "2: 4 Seater"`
	`OUTPUT "3: Historic"`
	`INPUT PlaneType`
	`OUTPUT "Please Enter Length of Flight"`
	`INPUT FlightLength`
	`CASE FlightLength of`
	`  30: OUTPUT "Maximum number of flights is 10"`
	`  60: OUTPUT "Maximum number of flights is 6"`
	`OTHERWISE OUTPUT "Invalid length of flight"`
	`ENDCASE`
	
	`CASE PlaneType of`
	`  1: Price30 ← 100; Price60 ← 150`
	`  2: Price30 ← 120; Price60 ← 200`
	`  3: Price30 ← 120; Price60 ← 500`
	`OTHERWISE OUTPUT "Invalid type of plane"`
	`ENDCASE`
	
	`CASE FlightLength of`
	`  30: OUTPUT "Total Possible Income is ", Price30 * 10`
	`  60: OUTPUT "Total Possible Income is ", Price60 * 6`
	`ENDCASE`
		5

1(c)	1 mark for each correct point related to the inputs for **Task 1** • Description of how the program would validate the input • Description/identification of input(s) • Type of validation check • Checking inputs against stored data/maxima/correct data • Dry-running the program • Use of test data • Identification of types of test data • Example(s) of test data	**4**

Question	Answer	Marks
1(d)	Any **four** from: • Input timeslot • Check 3 types of plane • Methodology for checking time slot • Identify any planes available • Output plane(s) available • Output if no planes available	**4**

Question	Answer	Marks
2	1 mark for each error identified plus suggested correction (the corrected lines must be written in full) Line 4 **correct line** `WHILE Number <= 99 OR Number > 1000` Line 7 **correct line** `Num[Index] = Number` Line 9 **correct line** `NEXT (Index)` Line 10 **correct line** `PRINT Count`	**4**

Question	Answer	Marks
3(a)	1 mark per bullet: • Validation checks whether data to be entered is possible/sensible // computer check • Verification checks that data entered is the data that was intended to be entered // can be a human check // matches the source	**2**
3(b)	1 mark for each valid point **Either** • Double Entry // suitable practical example • the data will be entered twice • compared by the computer or by a human • if a discrepancy is found, the data entry operator is asked to re-enter the data **Or** • Visual Verification // suitable practical example • the data will be compared to the source 'document' • compared by a human • if a discrepancy is found, the data is re-entered	**2**

Question	Answer	Marks
3(c)	1 mark for explanation and 1 mark for an expansion • Library routine is a list of instructions // block of code // subroutine • … that is used often … • … which is given a name • … and which can be called from other programs • Library routines make writing programs easier and faster as the code is already written • Library routines make program testing easier as the code has already been tested and debugged	**2**

Question	Answer	Marks
4(a)	1 mark for each correct line **Pseudocode description** / **Pseudocode statement** A loop that will iterate at least once. → REPEAT…UNTIL A conditional statement to deal with many possible outcomes. → CASE…OF…OTHERWISE…ENDCASE A loop that will iterate a set number of times. → FOR…TO…NEXT A conditional statement with different outcomes for true and false. → IF…THEN…ELSE…ENDIF WHILE…DO…ENDWHILE	**4**
4(b)	1 mark per bullet: • Appropriate loop controls • Read from array • Print from array (the last two points can be in one statement) Note reading and printing **MUST** be within the same loop Example algorithm: ``` Count ← 0 WHILE Count < 50 DO OUTPUT Name[Count] Count ← Count + 1 ENDWHILE ```	**3**

Question	Answer	Marks
5(a)		**5**

Flag	Count	Name[1]	Name[2]	Name[3]	Name[4]	Temp
		Jamal	Amir	Eve	Tara	
0	1	Amir	Jamal	Eve	Tara	Jamal
1	2	Amir	Jamal	Eve	Tara	Jamal
1	3	Amir	Eve	Jamal	Tara	Jamal
1	4	Amir	Eve	Jamal	Tara	Jamal
0	1	Amir	Eve	Jamal	Tara	Jamal
0	2	Amir	Eve	Jamal	Tara	Jamal
0	3	Amir	Eve	Jamal	Tara	Jamal
0	4	Amir	Eve	Jamal	Tara	Jamal

(1 Mark) (1 Mark) (--------1 Mark--------) (--------1 Mark--------) (1 Mark)

5(b)	1 mark per bullet: • Sorting the names • Ascending order / A to Z / lowest to highest / Alphabetic order	**2**

Question	Answer	Marks
6(a)	1 mark for any **sensible appropriate** field name 1 mark for data type, purpose + example data Example 1: Field Name: SPECIESID Data Type: Alphanumeric Purpose: Primary key Example Data: SP06583 Example 2: Field name: NUMBER Data Type: Integer Purpose: To record how many of that species there are at the park Example Data: 30	**2**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>6(b)</td><td>
<table>
<tr><td>Field:</td><td>Species</td><td>Classification</td><td>Diet</td><td>Legs</td><td></td></tr>
<tr><td>Table:</td><td>LIVESTOCK</td><td>LIVESTOCK</td><td>LIVESTOCK</td><td>LIVESTOCK</td><td></td></tr>
<tr><td>Sort:</td><td>Ascending/ Descending</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Show:</td><td>☑</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td>Criteria:</td><td></td><td>“Mammal”</td><td>“Herbivore”</td><td>4</td><td></td></tr>
<tr><td>or:</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>(1 Mark)</td><td>(1 Mark)</td><td>(1 Mark)</td><td>(1 Mark)</td><td></td></tr>
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1 mark per completely correct column.
</td><td>4</td></tr>
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