Cambridge Assessment International Education
Cambridge Ordinary Level

COMPUTER SCIENCE **2210/23**

Paper 2 **October/November 2017**

MARK SCHEME

Maximum Mark: 50

Published

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Cambridge Assessment
International Education

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:	**5**
	• 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 ```	
1(c)	1 mark for each correct point related to the inputs for **Task 1**	**4**
	• 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	

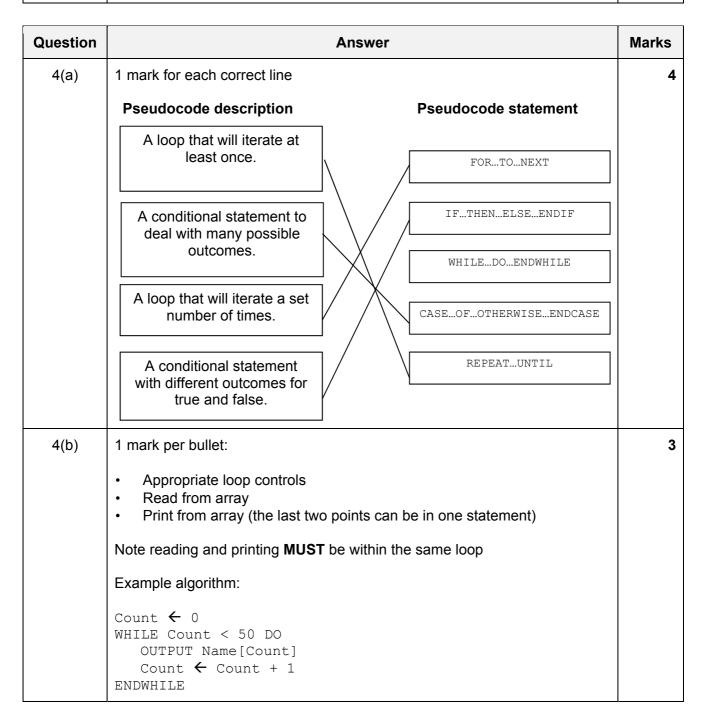| Question	Answer	Marks
1(d)	Any **four** from: • Input timeslot • Check 3 types of plane • Methodology for checking time slot • Identify any planes available • Output plane(s) available • Output if no planes available	**4**

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. A conditional statement to deal with many possible outcomes. A loop that will iterate a set number of times. A conditional statement with different outcomes for true and false. FOR…TO…NEXT IF…THEN…ELSE…ENDIF WHILE…DO…ENDWHILE CASE…OF…OTHERWISE…ENDCASE REPEAT…UNTIL	**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)	(see table below)	**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)

Question	Answer	Marks
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**

Question	Answer	Marks
6(b)	<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></table> 1 mark per completely correct column.	4