

QUESTION 1.



3	(a) (i)	enumerated	1
	(ii)	record	1
	(iii)	MyMonthOfBirth $\leftarrow$ DateOfBirth.ThisMonth	1
	(b) (i)	<pre> TYPE LocationRainfall DECLARE LocationName : STRING DECLARE LocationHeight : INTEGER DECLARE TotalMonthlyRainfall : <u>ARRAY[1..12]</u> OF REAL ENDTYPE </pre>	1 1 1 1 + 1
	(ii)	- no need to re-sort data every time new data is added - only a small file so searching will require little processing - new records can easily be appended	1 1 1 [max 2]
			Total: 10
4	(a) (i)		

QUESTION 2.



4 (a) (i)	HomeAddress.ThisHouseNo ← 34	1
(ii)	DECLARE ThisHouseNo: 1..10	1
	DECLARE ThisTown: [Brightown, Arunde, Shoram]	1
(b) (i)	TYPE WeatherStation DECLARE StationID : STRING DECLARE Latitude : REAL DECLARE Temperature : <u>ARRAY[1..15]</u> OF INTEGER ENDTYPE	1 1 1 + 1 1
(ii)	StationID is hashed to produce home location If home location is free insert record Else use overflow method to find free location	1 1 1
		Total: 11

QUESTION 3.



Question	Answer	
1(a)(i)	DECLARE Book : LibraryBookRecord	
1(a)(ii)	Book.Title ← "Dune"	
1(b)	TYPE LibraryBookRecord DECLARE ISBN : INTEGER DECLARE Title : STRING DECLARE Genre : (Fiction, Non-Fiction) DECLARE NumberOfLoans : 1 .. 99 ENDTYPE mark for correct declaration and first two fields (note : only if attempt at modification)	1 1 1
1(c)(i)	6715	1
1(c)(ii)	8216	1
1(c)(iii)	88	1
1(c)(iv)	FALSE	1
1(d)(i)	Temp2 ← 22	1
1(d)(ii)	IntPtr1 ← @Temp1	1
1(d)(iii)	IntPtr1^ ← Temp2	1

QUESTION 4.



Question	Answer	
1(a)(i)	DECLARE NewFriend : MyContactDetail	
1(a)(ii)	NewFriend.HouseNumber ← 129	
1(b)	Declaration of Name, Area, HouseNumber Inclusion of three correct values for Area Inclusion of correct range for HouseNumber For example: <pre> TYPE MyContactDetail DECLARE Name : STRING DECLARE Area : (uptown, downtown, midtown) DECLARE HouseNumber : 1..499 ENDTYPE </pre>	1 1 1 1 1 & 1
1(c)(i)	4402	1
1(c)(ii)	33	1
1(c)(iii)	3427	1
1(c)(iv)	TRUE	1
1(d)(i)	IPointer ← @MyInt2	1
1(d)(ii)	MyInt1 ← 33	1
1(d)(iii)	IPointer^ ← MyInt2	1

QUESTION 5.



Question	Answer	
5(a)	1 mark per bullet point to max 2 - No suitable data type is provided by the language used - The programmer needs specify a new data type ... that meets the requirements of the application / program	
5(b)(i)	1 mark per bullet point - EmployeeID declared as <code>STRING</code> <code>Sales, Technical and CustomerServices ...</code> ... with commas in-between <code>ENDTYPE</code> <pre> TYPE Employee DECLARE EmployeeID : STRING DECLARE EmployeeName : <code>STRING</code> DECLARE Department : (Sales, Technical, CustomerServices) DECLARE Salary : <code>25000..150000</code> ENDTYPE </pre>	4
5(b)(ii)	<code>DECLARE NewEmployee : Employee</code>	1
5(b)(iii)	<code>NewEmployee.EmployeeID ← "02244"</code>	1
5(b)(iv)	1 mark per bullet point to max 2 - Array - List - Set - Collection - Class - Stack - Queue - Linked list - Dictionary	2

QUESTION 6.



Question	Answer	Marks
6(a)	1 mark per bullet point to max 2 • Derived from one or more existing data types • Used to extend the built-in data types • Creates data-types specific to applications // programmer's requirements	2
6(b)(i)	Enumerated (data type)	1
6(b)(ii)	<code>DECLARE CurrentMonth : Months</code>	1
6(b)(iii)	<code>CurrentMonth ← August</code>	1