Mark scheme
January 2004

GCE

Computing

Unit CPT1

Computing: Unit CPT1

The following notation is used in the mark scheme

- **; - means a single mark;**

- **/ - means alternative response;**

- **A – means acceptable creditworthy answer;**

- **R – means reject answer as not creditworthy;**

- **I – means ignore.**

1.	(a)	data bus;	carries data to/from processor / memory / devices / components;	
		address bus;	carries addresses / identifies locations;	
		control bus;	carries control signals / controls devices;	
		A by example maximum 1 mark for carries Data / carries addresses / carries control signals		**6**
	(b)	network adapter / network card; **A** named example e.g ethernet card generate / understand signals / data (that conform to the LAN protocol) / Allows (successful) communication / Provides a unique network address; **R** connect		**2**
	(c)	Faster transmission;		**1**
	(d)	Data transmitted longer distance than is possible with parallel / less expensive to cable; **R** cheaper		**1**
			Total	**10**

2. (a) (i) Machine code; **1**

(ii) Assembly code/language; **1**

(iii) Pascal / Visual Basic / Basic / Java or any other 3GL; **1**

(b) Problem Oriented;
Portable/Platform independent;
One-to-many mapping of HLL statement to machine code statement;
data types / structured statements / local variables / parameters / data
structures / named variables / named constants / English-like <u>keywords /</u>
<u>commands / syntax</u>;
Quick /easy to understand / write / debug / learn / maintain;
R easy to read
Any 2 from 5 **2**

(c) (i) Syntax checking / Translate the (whole) source program;
Generate executable code; **2**

(ii) Syntax checking / Translate the source program <u>line by line</u>;
Execute the program; **2**

(d) (i) Where tested software is to be shipped to a user / or any situation where
the program needs to respond rapidly / can be run as a stand alone
program / create an executable;
Reasons may be software unable to be changed / speed of execution; **2**

(ii) software under development / run in a sandbox;
reasons may be software debugging tools / controlled environment; **2**

Total **13**

3. (a) 111111; **1**

(b) $256/2^8$; **1**

(c) $255/2^8$-1/ 11111111; **1**

(d) 0000 0001 0101 0100; **1**

Total **4**

4. (a) (i) <u>Example</u>
Personal data / from data logging devices / questionnaires / census data /
Meter readings / timesheets / credit card details / ids /
Or any appropriate example;

<u>Explanation</u>
Raw data / unprocessed data / coded data / input data
Collection of words, numbers, and other characters /
Or any other appropriate explanation;
R data with no meaning

2

(ii) <u>Example</u>
Statistical data / charts / diagrams / reports / bills / statements /
Or any other appropriate example;

<u>Explanation</u> Processed data / data with meaning / data with context / data with
structure / organised data / output data /
Or any other appropriate explanation; **2**

(b) (i) Credit card data collected to charge for a sale /
Timesheet data collected to produce payslips /
Meter readings collected to produce bills /
Or any example where data is used directly; **1**

(ii) Credit card sales used for marketing similar products /
Lists of employees from a payroll supplied to a trade union /
Lists of electricity customers used to sell electrical goods /
Or any use of data for some purpose for which it was not originally collected; **1**
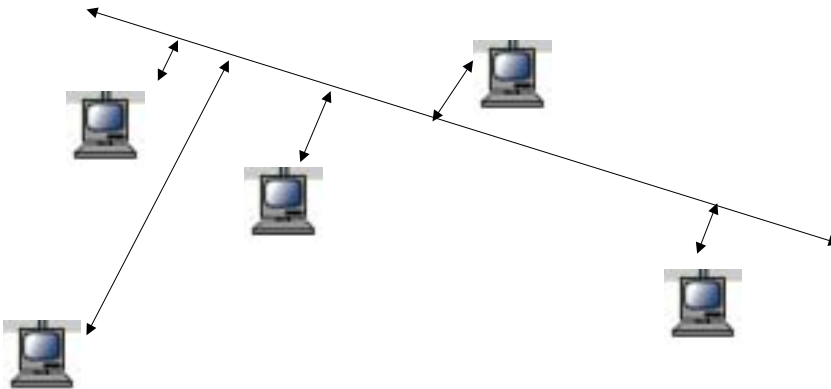
Total **6**
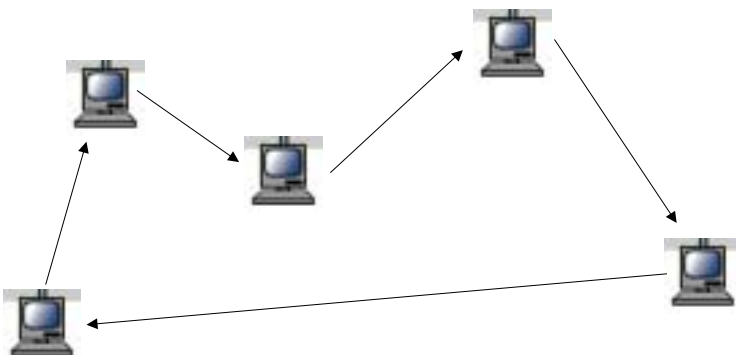
5. (i)
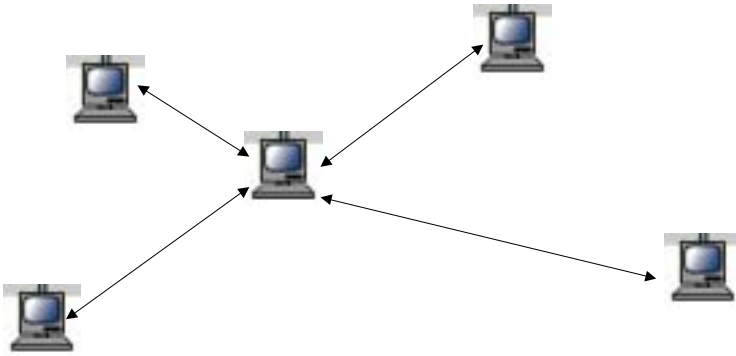
1 for connections; 1 for directions; **2**

(ii)

1 for connections; 1 for directions; **2**

(iii)

1 for connections; 1 for directions; **2**

Total **6**

6. (a) world-wide collection of networks/ computers using the same protocol;
world-wide collection of networks / computers using a standard protocol;
world-wide collection of networks / computers using TCP/IP;
world wide collection of networks / gateways / servers / computers using a common set of telecommunications protocols to link them together;
max 1 **1**

(b) Name used to reference Internet connected computer /
User friendly reference that maps to an IP address;
R Web site name / address
R example **1**

(c) Network providing Internet facilities <u>within an organisation</u> /
LAN using Internet protocol; **1**

(d) Protocol used + address of resource (in two parts: the server and then the path to the resource on this server) / Uniform Resource Locator;
R example **1**

(e) Numerical address / Stored in 4 bytes / Range 0.0.0.0 to 255.255.255.255/
Used to identify an individual computer / Internet Protocol address;
R example **1**

(f) Using a telephone line <u>to connect</u> to a network / using a modem <u>to connect</u> to a network/ <u>connect</u> as required; **1**

(g) Dedicated / private line connecting (geographically remote) computer systems /
(Wide area network) connection which is permanently on; **1**

Total **7**

7. (a) EBCDIC/EBCD;
ASCII;
UNICODE;
A minor spelling variations   Any 2   **2**

(b) (i)

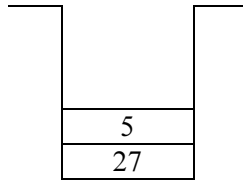| X	Index	Result			
		[3]	[2]	[1]	
835	0	-	-	-	
83	1	-	-	53	
8	2	-	51		
0	3	56			

1 mark for each correct entry   **6**

(ii) Convert a number into its character codes;   **1**

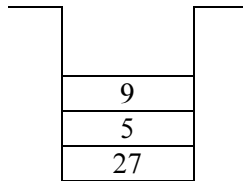   **Total**   **9**

8. (a)   Last In First Out;   **1**

    (b)   (i)

5
27

                                                                   1

        (ii)

9
5
27

                                                                     1

        (iii)

5
27

                                                                      1

        (iv)

6
5
27

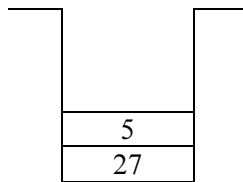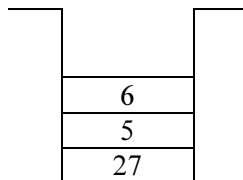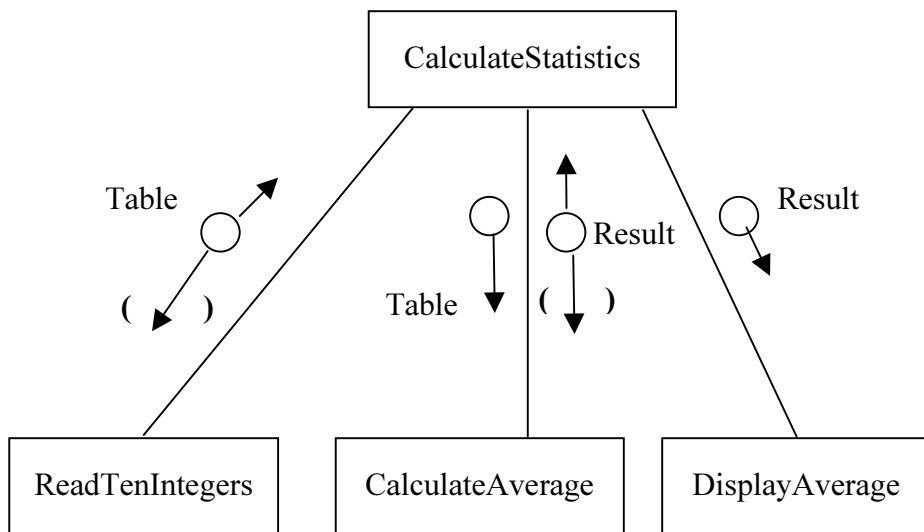   **1**

    (c)   To reverse elements/ pass parameters/ store volatile environment;
                          A store return address   **1**

                                                                   Total   **6**

9. (a) (i) Table/Result; **1**

(ii) To pass address of Table to ReadTenIntegers/
pass Table by reference to ReadTenIntegers/
allow ReadTenIntegers to enter data into Table/
pass elements of Table to CalculateAverage/
pass address of Result to CalculateAverage/
pass Result by reference to CalculateAverage/
allow CalculateAverage to enter data into Result/
pass value of Result to DisplayAverage; **1**

(b)

2

Total **4**

Grand Total **65**