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7010/01

October/November 2008

2 hours 30 minutes

No Additional Materials are required.

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO NOT WRITE IN ANY BARCODES.

No marks will be awarded for using brand names of software packages or hardware.

The number of marks is given in brackets [] at the end of each question or part question.

For Examiner's Use

This document consists of **16** printed pages.

1 Explain, using examples where appropriate, the meaning of these computer terms.

(a) mouse

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..... [2]

(b) search engine

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..... [2]

(c) buffer

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..... [2]

(d) RAM

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..... [2]

(e) download

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..... [2]

2 Describe **two** benefits of using top down design to develop computer software.

1
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2
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..... [2]

3 Write a routine using a **for ... to** loop which inputs 100 numbers and outputs how many of the numbers were negative.

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..... [3]

4 Computer systems can be affected in various ways which could lead to data corruption.
Give **two** ways that data might be corrupted and suggest a method of protection for each.

Corruption 1
.....

Protection method 1
.....

Corruption 2
.....

Protection method 2
..... [4]

5 Describe **two** ways in which computers have affected how music is written and produced.

1

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2

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[2]

6 A supermarket uses a computer system to control and order stock. All products sold are identified with a bar code which can be read at a Point Of Sale (POS) terminal.

(a) Apart from stock control, give **one** advantage to the supermarket of having bar codes on the products.

.....

..... [1]

(b) Give **one** advantage to the customer of using POS technology.

.....

..... [1]

(c) Describe how a computerised stock control system works.

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..... [3]

7 Many people now bank through the Internet rather than using banks located in towns.

(a) Give **one** advantage to a bank that offers Internet banking.

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.....
..... [1]

(b) Give **one** disadvantage to a bank that offers Internet banking.

.....
.....
..... [1]

(c) Give **two** advantages to customers of using Internet banking.

1
.....
.....
2
.....
..... [2]

(d) Give **two** disadvantages to customers of using Internet banking.

1
.....
.....
2
.....
..... [2]

- 8 To gain access to a database, a user must first type in a user ID and then a password which needs to be verified.

(a) How is a password usually verified?

.....
.....
..... [1]

(b) In spite of these safeguards, unauthorised access to the database is still possible. What could be done:

(i) to prevent data being used by unauthorised people?

.....
.....
..... [1]

(ii) to prevent loss of data once the database has been illegally accessed?

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.....
..... [1]

(c) Personal data is protected to some extent by a Data Protection Act. Give **two** requirements of a Data Protection Act.

1
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2
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..... [2]

- 9 Many computer networks use the RING and STAR configurations.

Compare the advantages and disadvantages of both types of networks. Include diagrams of the ring and star configurations to help in your discussion.

Diagram of ring network

Diagram of star network

Advantages and disadvantages of star networks

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Advantages and disadvantages of ring networks

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..... [5]

10 A large city has decided to computerise totally its traffic management system. Traffic lights and electronic road signs are now under automatic computer control.

(a) Sensors are placed around the city to gather information about traffic. Describe what information would need to be gathered.

.....

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.....

..... [2]

(b) Describe **two** ways the information from the sensors could be sent to the central computer which is located several miles away.

1

.....

2

..... [2]

(c) Give **two** advantages of having the traffic in the city controlled in this way.

1

.....

2

..... [2]

11 Mike has decided to send information to Asif by attaching a file to an email.

(a) Describe what happens after Mike writes his email, attaches the file and clicks on "send".

.....

.....

.....

.....

..... [2]

(b) Describe **two** potential problems when sending attachments via emails.

1

.....

2

..... [2]

- 13 A large car showroom employs a systems analyst to computerise their existing manual systems.

(a) Write down **four** of the stages in Systems Analysis.

- 1
2
3
4 [4]

(b) Describe **two** effects on the workforce of introducing the new computer system.

- 1
.....
2
..... [2]

(c) Give **two** benefits to the car showroom of allowing customers to access details of cars for sale using the Internet.

- 1
.....
2
..... [2]

- 14 Describe **three** of the stages taken to create an expert system to help in medical diagnosis.

- 1
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2
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3
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..... [3]

15 A database has been produced showing solar system statistics.

Name of planet	Distance from sun ($\times 10^6$) (km)	Number of moons	Number of rings	Maximum surface temperature ($^{\circ}\text{C}$)	Diameter (km)
Mercury	58	0	0	427	4880
Venus	108	0	0	480	12100
Earth	150	1	0	58	12756
Mars	228	2	0	17	6787
Jupiter	778	16	3	-150	143200
Saturn	1427	18	1000	-180	120000
Uranus	2871	15	11	-210	51800
Neptune	4497	8	4	-214	49528
Pluto	5914	1	0	-220	2330

(a) How many records are there in this database?

..... [1]

(b) The following search condition was typed in:

(Number of moons > 0) AND (Diameter (km) < 15000)

Using **Name of planet**, write down the results of this search:

..... [2]

(c) Write down a search condition to find out which planets have rings or have a diameter more than 50000 km.

..... [2]

(d) Name a **different** validation check for each of the following fields.

(i) **Maximum surface temperature ($^{\circ}\text{C}$)**

.....

(ii) **Name of planet**

..... [2]

- (e) The data in the database was sorted in descending order using the **Number of** field. Using **Name of planet** only, write down the results of this sort.

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..... [2]

- 16 (a) What is meant by virtual reality?

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..... [1]

- (b) Describe **two** special devices that are used for man-machine interaction in virtual reality systems.

1

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2

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..... [2]

- (c) Give **two** examples of typical output from a virtual reality system.

1

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2

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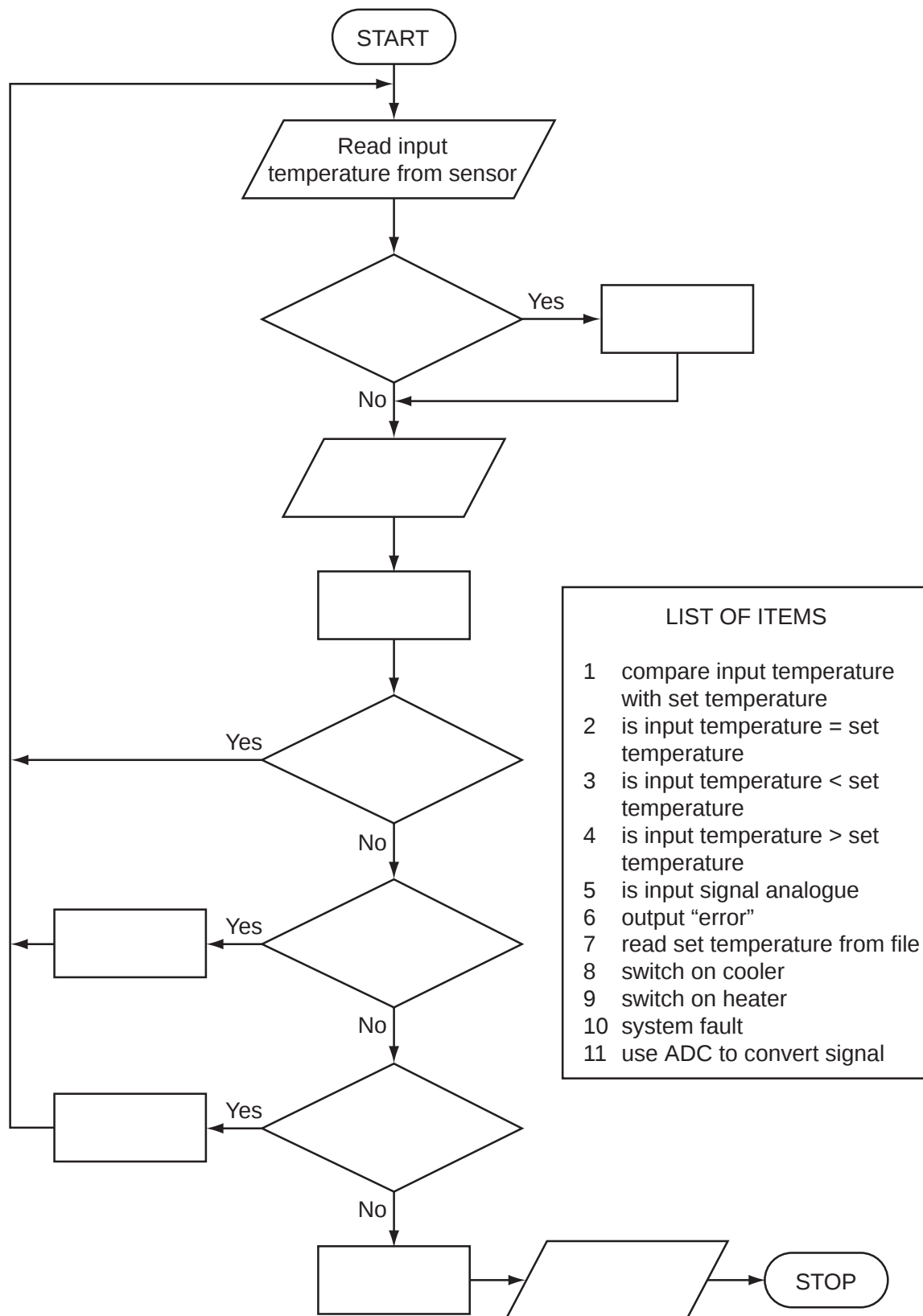
..... [2]

- (d) Give **one** example of a use of virtual reality.

.....

..... [1]

- 17 The following flowchart shows how sensors (which can be analogue or digital) and computer are used to control the temperature of a greenhouse for plants. Complete the flowchart using the items from the list below.

For
ininer's

18 A small library uses a database to monitor books being borrowed. Two of the tables in the database are linked together:

- books borrowed by the customers
- customer details

Each customer has a library card containing a unique customer code. Each book contains a unique bar code.

(a) Which data item could link the two tables together?

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..... [1]

(b) Today's date is 11 November 2008. Describe how the system would decide automatically which books were overdue and how the customers could be contacted to return the overdue books.

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..... [3]

- Item type 3: item cost = parts cost * 5.0

Write an algorithm, using pseudocode, flowchart or otherwise, which

- inputs the item type and parts cost of each item
- outputs the item cost for each item
- calculates and outputs the average (mean) item cost per day (based on 1000 items being made).

[5]