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INFORMATION TECHNOLOGY

9626/12

Paper 1 Theory

February/March 2017

1 hour 45 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces at the top of this page.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, glue or correction fluid.

DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

At the end of the examination, fasten all your work securely together.

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

Any businesses described in this paper are entirely fictitious.

This document consists of **15** printed pages and **1** blank page.

1 Tick the **four** most accurate statements regarding the quality of information.

| | |
|---|---|
| | ✓ |
| The more information that is collected the higher its quality. | |
| Data collected from a third party always becomes high quality information. | |
| The accuracy of the information collected affects its quality. | |
| Information which costs a lot to collect is always high quality information. | |
| A great deal of detail can sometimes lead to poor quality information. | |
| Irrelevant information leads to poor quality information. | |
| The problems arising from a lack of good quality information can be overcome by making your filters more refined. | |
| Good quality of information is always obtained from small groups of people. | |
| Information collected 100 years ago is always good quality information. | |
| The more complete the collected information is, the better its quality. | |

[4]

2 Tick the **four** statements which most accurately refer to encryption.

| | |
|--|---|
| | ✓ |
| Encryption is used by hackers to discover passwords. | |
| Encrypting a hard disk prevents viruses from deleting the information. | |
| Encryption always makes use of a public key and a private key. | |
| Encryption is the scrambling of the text in a message. | |
| Encryption is the process of encoding messages in such a way that only authorised parties can understand them. | |
| Encryption prevents messages from being intercepted. | |
| Encrypted information can only be understood if decrypted. | |
| Encryption has speeded up internet browsing by using secure sites. | |
| The recipient can only decrypt the message with the key provided by the originator. | |
| All memory sticks are encrypted. | |

[4]

3 A school secretary has been handed some data by a student:

Prasad, Anoushka, SR132516, 52, 01/09/2000

Explain why they are regarded as just items of data. In your explanation give a possible context for the data and describe how this would make the data become information.

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- 4 There are many types of user interface in computerised systems. Three types are a graphical user interface, a dialogue interface and a gesture based interface.

Evaluate these types of user interface.

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5 Avtar is a recently appointed network manager in a school. In his role he will need to use a variety of utility software.

(a) Describe, in detail, each of the following utilities.

(i) anti-virus software:

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(ii) data compression:

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(iii) disk defragmentation:

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(iv) disk formatting:

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(b) There are a number of computers in the school which are not networked at the moment. Discuss the advantages and disadvantages of creating a new network using these computers.

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- 6 Amisha, the Management Information System (MIS) manager has just purchased some MIS software for her company.

Explain how it can be used by Amisha to help the company run more efficiently.

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- 7 Atat Iron Ltd uses computers to process its payroll. The company pays its workers weekly which involves the updating of a master file.

Two sets of data are shown below.

The first set represents part of a transaction file containing workers' ID numbers and the hours worked by those workers in a particular week.

The second set represents part of the master file used by the company. This shows the workers' ID numbers, departments they work in and the rate per hour at which they are paid in Indian Rupees (₹).

Transaction file

| Workers_ID_number | Hours_worked |
|-------------------|--------------|
| 047006 | 40 |
| 486439 | 40 |
| 592786 | 38 |
| 758789 | 40 |
| 512759 | 37 |
| 869891 | 40 |
| 471584 | 38 |
| 131654 | 40 |
| 243303 | 40 |
| 235804 | 35 |

Master file

| Workers_ID_number | Department | Hourly_rate (₹) |
|-------------------|-----------------|-----------------|
| 031597 | Extrusion | 62 |
| 047006 | Cold rolling | 55 |
| 131654 | Extrusion | 62 |
| 235804 | Foundry | 50 |
| 239412 | Foundry | 50 |
| 243303 | Hot rolling | 58 |
| 471584 | Cold rolling | 55 |
| 486439 | Tube production | 65 |
| 500368 | Extrusion | 62 |
| 512759 | Tube production | 65 |
| 592786 | Foundry | 50 |
| 758789 | Tube production | 65 |
| 869891 | Extrusion | 62 |
| 942378 | Hot rolling | 58 |

- (a) Describe what processes must happen before the updating can begin.

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(c) When a new worker is added to the master file, the data must be validated. His hourly rate will be 50 Rupees.

Without using a type check, describe **three** other validation checks you would develop to make sure **all** the data entered is sensible.

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8 Below is part of a spreadsheet Jose has created to model his personal finances.

| | A | B | |
|----|---------|-----------------|--|
| 1 | \$2,600 | Wages/salary | |
| 2 | | | |
| 3 | \$120 | Utilities | |
| 4 | \$100 | Satellite/TV | |
| 5 | \$80 | Phone | |
| 6 | \$30 | Pet food | |
| 7 | \$1,000 | Mortgage/rent | |
| 8 | \$80 | Internet | |
| 9 | \$100 | Insurance | |
| 10 | \$75 | Hair/beauty | |
| 11 | \$550 | Groceries | |
| 12 | \$150 | Eating out | |
| 13 | \$100 | Clothing | |
| 14 | \$40 | Cinema | |
| 15 | \$160 | Car/travel | |
| 16 | | | |
| 17 | \$2,585 | Total outgoings | |
| 18 | | | |
| 19 | \$15 | Balance | |

Using **only** the sort feature explain how you would be able to get the following values in the given cells.

(i) \$80 in cell A11 with Internet in cell B11 and \$1,000 in cell A3.

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(ii) \$100 in cell A8 with Clothing in cell B8.

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10 Below is an extract from a database of students who have chosen to study Maths at AS Level. The database is in unnormalised (0NF) form.

| Student number | Name | Second subject | Third subject |
|----------------|-------------------|----------------|---------------|
| 1001 | Eashan Wadhwa | Chemistry | Physics |
| 1002 | Karan Bansal | Physics | Chemistry |
| 1003 | Manan Malik | Chemistry | Biology |
| 1004 | Neel Bhatia | Biology | Chemistry |
| 1005 | Ridhima Shekhar | History | Biology |
| 1006 | Rohin Pannu | Geography | History |
| 1007 | Saransh Anand | History | Geography |
| 1008 | Shraddha Aggarwal | Biology | Chemistry |
| 1009 | Rekha Pooja | Physics | Chemistry |
| 1010 | Sundar Rakshana | Physics | Chemistry |

Describe the characteristics of the data above which make it unnormalised and explain how it can be transformed into first normal form (1NF).

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- 11 Below is an extract from a spreadsheet showing the wages paid in one week to a group of workers. Their wages depend on the type of job they do as well as the number of hours worked. Cells C2 to E4 contain the data which is referred to in the lower part of the spreadsheet.

| | A | B | C | D | E | F | G |
|----|-----------|----------|--------------|------------------------|--------------------|---------------------|---|
| 1 | | | | Standard rate per hour | | | |
| 2 | | | L | Labourer | ₹55 | | |
| 3 | | | Se | Semi-skilled | ₹65 | | |
| 4 | | | Sk | Skilled | ₹75 | | |
| 5 | | | | | | | |
| 6 | Worker ID | Job Code | Job type | Hours worked this week | Rate per hour paid | Wage paid this week | |
| 7 | | | | | | | |
| 8 | 12478L | L | Labourer | 40 | ₹55 | ₹2200 | |
| 9 | 13691R | Se | Semi-skilled | 38 | ₹65 | ₹2470 | |
| 10 | 21463R | Se | Semi-skilled | 40 | ₹65 | ₹2600 | |
| 11 | 29816M | L | Labourer | 36 | ₹55 | ₹1980 | |
| 12 | 36479L | Sk | Skilled | 34 | ₹75 | ₹2550 | |
| 13 | 49786R | Sk | Skilled | 40 | ₹75 | ₹3000 | |
| 14 | 52376M | Se | Semi-skilled | 36 | ₹65 | ₹2340 | |
| 15 | 18964L | L | Labourer | 35 | ₹55 | ₹1925 | |
| 16 | 13578R | L | Labourer | 40 | ₹55 | ₹2200 | |
| 17 | 38945M | L | Labourer | 40 | ₹55 | ₹2200 | |
| 18 | 36249M | Se | Semi-skilled | 40 | ₹65 | ₹2600 | |
| 19 | | | | | | | |

- (a) Write down the formula which should be used in cell C8 in order to display the Job type using the Job Code in the preceding column. The formula should be in a form that can be easily replicated.

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You can use the space below for any working you need.

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