M11/3/ITGSX/BP1/ENG/TZ0/XX/R

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INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY
HIGHER LEVEL AND STANDARD LEVEL
PAPER 1

Candidate session number

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Thursday 5 May 2011 (afternoon)

1 hour

Examination code

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INSTRUCTIONS TO CANDIDATES

- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Answer all questions.
- Write your answers in the boxes provided.

1. A teacher has set up a spreadsheet to record the results attained by his class in the ITGS Paper 1 mock exam.

	A	B	C	D
1	Paper 1 results			
2				
3	Name	Raw mark out of 40	Percentage	Grade
4	Barbara	10	25%	1
5	Elizabeth	24	60%	4
6	Richard	36	90%	7
7	Sarah	32	80%	7
8	Sean	40	100%	7
9	Tammy	26	65%	5
10				
11	Grade boundaries			
12	Lowest mark for grade	Grade		
13	5	1		
14	13	2		
15	15	3		
16	18	4		
17	25	5		
18	28	6		
19	32	7		

(a) (i) The percentage marks in column C are calculated by the spreadsheet using a formula. Identify the formula used in cell C4. *[1 mark]*

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(ii) Identify the type of formatting that has been applied to the formulae in the range (C4:C9). *[1 mark]*

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(Question 1 continued)

(b) The grades in cells D4 to D9 are produced automatically by the spreadsheet. Describe how the spreadsheet has been set up in order to generate these grades.   *[4 marks]*

(c) The teacher uses a macro to plot a chart showing these results. Explain why macros are a useful way to generate output such as charts from a spreadsheet.   *[4 marks]*

Turn over

2.   An organization employs many people who work from home. When staff have completed a task, they make a claim for the expenses they have incurred. The organization is implementing an online system for its staff to make claims. This replaces the old paper-based system where claims were made by post.

One of the on-screen forms for making the claims is shown below.

Expense Report

	Expense Type	Subsistence ▾
*	Start Date	03-09-2012
	Daily Rate	200.00
	Number of Days	1
	Receipt Amount	0.00
	Receipt Currency	SEK - Swedish Krona ▾
*	Exchange Rate	

[Submit]   [Reset]

* Error!
1. Start Date - You entered the expense with an invalid future date. Please enter a date before 01-03-2011.
2. Exchange Rate - There is no default exchange rate for this currency. Please enter an exchange rate.

(a)   Drop-down boxes have been used to capture two of the data items on the form. Identify **two** reasons why drop-down boxes are often used to capture data from on-screen forms. *[2 marks]*

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(Question 2 continued)

(b)   The error message at the base of the screen highlighted two errors when the user inputted data to this form. Describe the steps taken by the system to identify these two particular errors.   *[4 marks]*

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(Question 2 continued)

(c) The organization has stopped using its old paper-based system and its staff must now use the new online system. Explain what the organization should do to make sure that all the users are ready to make full use of the new system. *[4 marks]*

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Answers written on this page
will not be marked.

Turn over

3. Digital cameras produce JPG bitmapped image files and save them onto their memory cards. However, some photographers prefer to save their photos in PNG format for long term storage. High resolution digital photos have image files that are very large and many photo sharing web sites will not accept files above a certain size.

It is possible to convert digital image files so that they occupy less space. The images below are the same photo saved in different file formats and at different resolutions.

pigeon1.PNG (947 KB)　　　　　　　　　　**pigeon2.JPG (29 KB)**

(a)　　Define the term *resolution* when referring to an image.　　　　　　*[2 marks]*

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(Question 3 continued)

(b)   (i)   Identify **two** disadvantages of converting the file pigeon1.PNG into the
file pigeon2.JPG.   *[2 marks]*

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(ii)   Describe **one** technique used in image conversion software that would
enable the conversion of the file pigeon1.PNG into the file pigeon2.JPG.   *[2 marks]*

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(Question 3 continued)

(c)　Explain why photo sharing web sites will not allow users to upload large image files to them.　　　　*[4 marks]*

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4. Hackers often guess passwords in order to access computer systems. They also sometimes use "brute force" attacks to crack passwords. This is when a program is used to try all possible passwords systematically until the correct one is found.

A password is regarded as "strong" if it is difficult to crack. The strongest passwords are those which are generated at random. However, as they are difficult to remember, most people prefer to choose their own password.

Programs exist which can assess the strength of a password. The results from choosing three different passwords are shown in the examples below.

Password: ITGS

Password: ●●●●

Strength: Weak

Password: manchesterunited4eva

Password: ●●●●●●●●●●●●●●●●●●●●

Strength: Medium

Password: Bea6^%nn9!xzq

Password: ●●●●●●●●●●●●●●

Strength: Strong

[Source: adapted from http://microsoft.com/protect/fraud/passwords/checker.aspx, 6 November 2009]

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(Question 4 continued)

(a)   Identify **two** features of a "strong" password.   *[2 marks]*

(b)   Identify the steps that a "brute force" attack could use to try out all the possible
       passwords to a computer system.   *[4 marks]*

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Turn over

(Question 4 continued)

(c)   Trojan horses and keystroke loggers (often called keyloggers) can be used
      by hackers to intercept passwords when bank customers access their
      accounts online. Explain **two** methods a bank can use to prevent customers'
      passwords from being intercepted in these ways.   *[4 marks]*

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