

**MARK SCHEME for the October/November 2013 series**

**9713 APPLIED INFORMATION AND  
COMMUNICATION TECHNOLOGY**

**9713/13**

Paper 1 (Written A), maximum raw mark 80

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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- 1 (a) **Two** from:  
 Involves working the same number of hours as normal/in a week  
 Work more hours per day...  
 ...over a shorter number of days  
 Usually involves working 4½ days in a week/9 days out of 10 in a period of two weeks [2]
- (b) **Two** from:  
 Earn the same amount of money but work fewer days  
 They can have long weekends by finishing early on Fridays or not working Fridays  
 Travel to work fewer days so less time spent travelling  
 Travel to work fewer days so less money spent travelling [2]
- (c) **Two** from:  
 Allowing for programmers' individual needs leads to lower absenteeism/better punctuality among programmers  
 Programmers prefer flexibility so are more productive/more motivated  
 Appeals to programmers so helps recruitment and retention of staff [2]
- 2 (a) **Three** from:  
 There are personal (users' own) calendars and public calendars  
 Pietr would open his private calendar to see when he is free  
 Pietr would open the public calendar showing when other workers are free  
 He would see when there would be a suitable time for a meeting/ identify a suitable time when he is free and when others are free/where there are no clashes  
 Calendar software would advise him of any clashes.  
 Pietr would type in the details of the meeting  
 Petr sets an alarm to alert him when the meeting starts  
 Calendar function keeps a record of appointments and meeting times [3]
- (b) **Three** paired descriptions from:  
 Acts as a stopwatch device to time tasks...  
 ...enables tasks to be allocated equitably  
 Pietr just clicks on a specific task...  
 ...computer reminds them how long they have been working on that task  
 Can look at many tasks...  
 ....computer informs them how long has been spent on each task  
 Can see what emphasis is being placed on each task...  
 ....if too much time is being spent on a task by one programmer  
 Allows the manager to allocate extra workers to a task/redistribute workload...  
 ....allows the manager to allocate extra resources to a task  
 Software can also be used as a predictor/if Pietr is accurate at predicting the time needed on a task...  
 ...he will be able to allocate resources appropriately  
 Using Gantt charts....  
 ..... can see the effect of changing order of tasks more easily/helps with daily and weekly planning  
 Using Critical Path Analysis...  
 ...to find the optimum time to spend on a task/ensuring an equitable workload for all workers [6]

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- 3 (a) Four from:**  
 Meetings can be called at short notice.  
 No time is spent on travelling.  
 No money is spent on travelling.  
 No money is spent on booking conference facilities.  
 It saves companies money in wages, as while their workers are travelling they still have to be paid. **[4]**
- (b) Four from:**  
 Confidential documents may need to be seen in their original form.  
 There can be poor quality of the video because of bandwidth  
 Interruption to, or breakdowns of, the transmission can occur.  
 Power cuts may prevent the conference from continuing or taking place in the first instance.  
 Description of hacking into video conference  
 May be problems with time lag/connection  
 Difficult to allow participants to answer in turn **[4]**
- 4 (a) Five from:**  
 A list of the features of the new system that are required/system requirements/information requirements  
 It contains general requirements such as what the user wants the overall system to do/user requirements  
 It will also include specific requirements such as what the user wants individual parts of the system to do  
 Examples of specific and general requirements related to the scenario may be awarded marks  
 He will have issued questionnaires/interviewed the users to ascertain their requirements  
 He will have observed the users and recorded this...  
 He will have/examined documents and recorded this...  
 ...will have used this to ascertain the user requirements **[5]**
- (b) Five from:**  
 It needs to be as simple as possible/easy to use/read  
 Screen output should not contain any extra material other than that required.  
 Each screen of output must have a consistent theme  
 The user should not get confused by changing appearances  
 Instructions on how to navigate between screens should be included on the screen.  
 Should be easy to navigate from screen to screen  
 Must meet user requirements  
 Need to consider who is going to use it  
 The formats need to be relevant to the output produced  
 The formats need to be based on what the user is comfortable with.  
 Needs to be attractive to look at  
 Needs to limit the potential for inaccurate input **[5]**

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(c) *Pilot running*

Description – involves running new system in one branch of the organisation whilst old system still operates in other branches [1]

Advantage – If there is a problem with the new system only one branch is affected [1]

Disadvantage – the method is a lot slower than direct changeover (as all branches have to have their systems running before system is fully implemented) [1]

*Parallel Running*

Description – running the old system alongside the new system [1]

Advantage – If there is a problem with the new system still have the old system as a backup unlike direct changeover [1]

Disadvantage – more expensive as you have to employ two sets of workers/the method is a lot slower than direct changeover as you have to wait until system is fully operational before closing down existing system [1]

(d) **Three** from:

Using actual test results to compare with the expected results.

Obtaining feedback from users regarding how easy the system is to use

Identifying limitations of the system

Discussing with managers whether new system has met the original objectives [3]

5 (a) **Three** from:

Word processing software to edit/format the reporter's story

Image editing software to crop the images to remove unwanted material/ to reduce the size to fill the layout

Desk Top Publishing software to produce the layout of the magazine page. [3]

(b) **Three** from:

(Digital) Signals are used to send the pages up to a satellite...

...satellite transmits the signal to the printing plant (and then received by the antenna/receiver)

Signal passed over to Computer-to-Plate equipment.

The (digital) signal is changed to a laser beam.

A new plate is created

The plate is then loaded on to the printing press. [3]

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- 6** **Six** from:  
 ICT make lessons more interesting/entertaining  
 ICT make lessons more varied  
 Internet allows students to investigate ideas  
 Internet allows students to carry out research  
 Neatness of students work makes it easier for teacher to mark  
 ICT provides more interactive learning environment  
 ICT resources can help students with special needs  
 Teachers have more varied teaching aids/can make use of multimedia in lessons  
 Teachers can use/produce computer based tests/can use ICT to assess students' performance  
 Teachers can use spreadsheets/databases to record test scores/produce graphs of progress  
 Easier to compare class/students performance/track progress  
 Tests can be computer-marked  
 Computers can provide feedback on tests **[6]**
- 7 (a) Four** from:  
 Data is ordered sequentially  
 A table of indices is stored  
 Data is stored on disk  
 Index is a pointer to whereabouts on the disc it is stored  
 When searching data prior to the whereabouts of the index can be ignored  
 This allows direct access  
 Each record consists of fixed length fields **[4]**
- (b) Four** from:  
 They may need to send out reports to all/many students at the same time  
 File will need to be in sequential order for batch processing of reports  
 After an exam they may need to update the records of all/many students at the same time  
 File will need to be in sequential order for batch processing of student scores  
 Exam scores may be on a transaction file for a short time  
 Transaction file will be sorted in student number order  
 Master file will need to be in sequential order for batch processing...  
 ...For ease of updating using transaction file  
 Parent may phone to/teacher may enquire about progress of a student...  
 ...Fast access to data will be required  
 Indexes will make sequential file faster to search **[4]**

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(c) **Three** matched pairs from:

Range check on student score so it is between 0 and 100  
 Invalid character/Type check on exam score so it is numeric only  
 Length check on student number so it is ten digits/characters long  
 Invalid character/Type check on student number so it is numeric only  
 Check digit on student number  
 Range check on student number so it is between 1000000000 and 9999999999

Reasons:

Data may have been transcribed wrongly  
 Digits may have been transposed  
 Length check on student number won't trap letters being entered  
 Type check on student number won't trap fewer/more than 10 digits  
 Type check on exam mark might still allow abnormal data to be entered

[6]

8 (a) **Three** from:

Don't have to rent so many main street premises so company saves money  
 Don't have to employ so many shop assistants so company saves money/pays less in wages  
 Lower running costs for electricity, heating and lighting  
 Because of lower costs, prices are cheaper so more customers are attracted  
 Can be open 24/7 thereby increasing their sales/earnings/ could gain increased profits

[3]

(b) **Three** from:

Can order goods/books and they don't get delivered  
 Goods are not to the same standard as those ordered/wrong goods/books delivered  
 May be hidden costs such as delivery charges  
Expense of buying a computer with a broadband internet connection  
 You can't check the quality of the goods/books/you can't be sure the goods/books are in stock  
 The order confirmation may be delayed/not be received

[3]

(c) **Two** from:

Phishing – e-mail appear to be from customer's shop/bank  
 ask for customer's details - password, card/account number, other security details.  
 e-mail makes up plausible reason includes a website address for customer to go to which looks just like the actual bank/shop's website but is a fake website

**two** from:

Pharming – installs a piece of malicious code on customer's PC  
 redirects genuine website's traffic to own website  
 customer is now sending personal details to fraudster's website

**two** from:

Spyware is downloaded/software used to gather user's personal details  
 Software detects key presses of user logging on to bank site

[6]