Information and Communication Technology

Report on Student Performance in the Practice Papers

The practice papers were piloted in seven schools with 170 students participating in the pilot exercise. The numbers of valid samples collected in Papers 1B, 2A, 2B, 2C and 2D are 126, 30, 37, 82 and 30 respectively. For each paper, six samples are selected to illustrate the typical performance of the students. They are labelled with **H**, **M** and **L** to represent the high, mid and low performance levels of the students in this pilot exercise. Readers are advised to study this report together with the selected samples so that they can gain a better understanding of the students' performance.

Paper 1B (Compulsory)

Question Number	Performance in General
1	Nearly all students understood key field and Unicode. Only about a quarter of the students knew the SQL command and filter functions. All students were expected to understand the basic concept of RFID and barcode which are widely used in our daily life. However their performance was fair. A small number of students even thought that RFID could detect a barcode and replace the barcode reader. In fact, RFID and barcode are of different technology domains.
2	About half of the students copied the items given in the question without further explanation, for example, connectivity, weight and dimension. Just under half of the students were familiar with different types of memory. Some other students wrongly responded that the access speed of SDRAM was low or the flash memory was volatile. It revealed that they did not acquire the functions of the fundamental components of a computer system. The students had a good knowledge of computer virus and understood the basic concept of virus infection. In general, the question was well answered.
3	The students performed poor in understanding the flowchart. They were not able to master the algorithm revealed from the flowchart and do a comparison between algorithms in different forms.
4	Although almost all students surf the web and send email everyday, a very high proportion of them did not understand the protocols used in these Internet services and did not answer the underlying principles of using IMAP and POP in email.
5	The students were able to suggest validation rules for checking input data. About half of them did not provide complete, correct formulae in the spreadsheet. Moreover, the answers they responded on chart drawing and object linking and embedding were insufficient. It revealed that they did not have much practical experience in using these kinds of functions in the spreadsheet.

Paper 2A (Elective)

Question Number	Performance in General
1	The students had a good understanding of the concepts of key and index in relational database. Some students tried to use more than one SQL command to solve a problem, which was not necessary in the question. They just made the task more difficult.
2	Only about a quarter of the students could demonstrate the correct concepts of data redundancy and referential integrity. The students made careless mistakes in drawing the E-R diagram and applied wrong notations to the diagram. They should refer to the Curriculum and Assessment Guide and the symbols used in E-R diagrams printed on the question paper.
3	The students performed well in the SQL commands. About two thirds of the students did not know they can use more than one query to solve Part (e).
4	The students had a good understanding of the concepts of data dictionary. About half of them did not know the job responsibility of a database designer and a data entry operator. Moreover, they could not adequately describe the application of data mining in the example. The students did not give a comprehensive explanation for 3NF. It seems that the students needed a breakdown of 1NF, 2NF and 3NF in order to construct the description of 3NF.

Paper 2B (Elective)

Question Number	Performance in General
1	The students were familiar with networking devices (switch and hub) and IP addressing (DHCP and fixed IP).

They were weak in practical network experience and had difficult to demonstrate their knowledge of sharing a printer via a network. They also did not understand the high level networking concept (CSMA/CD and CDMA/CA). |
| 2 | The students were weak in troubleshooting network problems. They had wrong networking concepts and thought that system recovery could help the restore of data loss and backup could help redundancy. |
| 3 | The students demonstrated a good knowledge of firewall and proxy server.

About three quarters of the students did not understand VPN. They also did not know how to configure a network properly. It revealed that they did not have sufficient hands-on experience in practicing the knowledge. |
| 4 | Only a very small number of the students were familiar with wireless security. The other students thought that SSID was unique, leading to a wrong construction of the wireless network. |

Paper 2C (Elective)

Question Number	Performance in General
1	The students demonstrated a good knowledge of multimedia elements including their configuration, application and comparisons. However, about half of them were not familiar with the attributes of video and did not suggest adequate attributes in which the videos could be standardised.
2	About half of the comparisons between the two designs made by the students were hollow and irrelevant. The scenario in Part (f) was new to the students. They could not understand it thoroughly and performed poor. The students understood how to manipulate and display text on web pages in a logical manner. A very high proportion of the students could answer 'block the right mouse button' in Part (g). It revealed that they had good practical experience in surfing the web and understanding the mechanism behind.
3	The students had a good knowledge of the need of text-based web pages over the graphical one and the steps involved in creating animations. They also demonstrated a good understanding of the relationship between frame rate, file size and quality, and the use of different action buttons related to animation in web pages. The students were weak in demonstrating the concepts of lossy and lossless compressions for GIF and JPEG and explaining the limitation that browser could not support the display of vector graphics.
4	The students performed very poor in this question. In general, they had the following misconceptions: ▪ In terms of security, server-side scripting is better than client-side scripting because the physical protection of server is better than that of client. Moreover, server is always protected by firewall. ▪ 'Databases' is the location for the client-side to store the authentication information. ▪ Hidden text in web page is embedded by the tags `<!--` and `-->`. ▪ Hidden text is an encryption. They were weak in giving the form elements of web pages and the detailed validation process by using scripting and the interaction with servers.

Paper 2D (Elective)

Question Number	Performance in General
1	The students' performance was satisfactory. The students could trace the algorithm and give the results, but could not identify the purpose of the algorithm. Students had difficulty in analysing the function of each step in the algorithm. About three quarters did not making comparisons with the change on the algorithm. A very high proportion of the students failed to identify the linking method. They were not familiar with the use of subroutine and its mechanism in programming.
2	The students had a good knowledge of data structure. They could manipulate the pointers in a list and the insertion and deletion processes. However, they could not describe the purposes of the pointers in a list, which was important to the implementation of the data structure. Nearly all students had no knowledge of project scheduling. They could not analyse the tasks, a breakdown of the project, and make use of the Gantt chart to illustrate the project schedule. They were also not familiar with system conversion methods and did not give a valid method in the question.
3	The students' performance was poor. A very high proportion of them could not apply procedures and functions, parameter passing methods, and return values of functions correctly. Nearly all students could construct the test plan with valid test values and expected results. They had some knowledge of object-oriented programming but could not identify all the characteristics of an object-oriented programming language illustrated in the question.
4	The students' performance was satisfactory. They traced and understood the algorithm but could not notify the logical error. Nearly all students could not manipulate text files. They could not write proper statements to perform the file handling operation and to eliminate the infinite loop. The students understood various job titles for different stages of systems development and identified their major duties in their expertise.