LAPORAN PEPERIKSAAN STPM & MUET 2021

Information and Communications Technology (958)

CONTENTS

INFORMATION AND COMMUNICATIONS TECHNOLOGY (958/1)

OVERALL PERFORMANCE

The number of candidates for this subject was 582. The percentage of candidates who obtained a full pass was 54.97%.

The achievement of candidates according to grades is as follows:

Grade	A	A–	B+	B	B–	C+	C	C–	D+	D	F
Percentage	7.90	3.61	3.09	2.92	13.40	8.59	15.46	15.29	12.89	6.19	10.65

CANDIDATES' RESPONSES

PAPER 958/1

General comments

Overall, the questions were clear and the coverage was within the syllabus. The questions were suitable for the study level. Question 7 was particularly relevant to the pandemic situation that we were all facing. Questions 3(*b*)(ii), 4(*a*), 4(*c*) and Question 6 were among the challenging questions.

The level of difficulty for the whole question paper was easy to moderate. Question 6 was more difficult than Question 7. Thus, the marks attainment would depend much on the choice of questions answered.

Overall, the English and its Malay translation provided a clear and well-structured questions. The quality of answers by candidates were good. Presentation of answers was clear and most candidates elaborated their answers well. Candidates could be seen answering the questions according to its question order. Most candidates answered in English.

Questions 1, 2, 3, 4, 5 and 7 were mostly answered with some candidates attaining good to moderate marks. Questions 3(*b*)(ii), 4(*a*), 4(*c*) and 6 were the challenging ones. Question 6 was not as popular as Question 7.

Candidates' strength was showcased in Question 4(*b*) particularly because the question only asked the candidates to give the basic principles of animation, in which candidates can list the answer without elaboration. However, this is only possible if they know the answers.

Candidates' weakness was shown in Questions 4(*a*) and 4(*c*), only a few candidates were able to answer these correctly. Question 4(*a*) was only about stating the meaning of the term *Phi Phenomenon*, which the candidates may not have encountered before. Question 4(*c*) was on describing a technique of animation based on a sample diagram. Candidates thought that Questions 4(*b*) and 4(*c*) were linked, as they were providing answers selected from 4(*b*). It was interesting to note that only a few candidates were able to answer 4(*c*) even for candidates with the correct answer of 4(*b*). This may indicate that candidates actually know the principles of animation but they did not know the specific techniques for producing animation.

Question 3(*b*)(ii) was calculation question and Question 6 was a technical drawing of network topology. This may indicate the lack of technical knowledge of the candidates.

Questions 2 and 7 were particularly interesting to the candidates since it is close to their own experience. For example, in Question 2, there were answers in both positive and negative sense, (the correct one was in a negative sense), in which the candidates' answers would depend on their experience of receiving such an email.

Similarly, in Question 7, it was about their experience in using any e-Government services. Although the question seemed easy but the several scripts were found not to provide answers precisely. Candidates could be seen not to provide specific example of e-Government services, instead, the candidates provided answers such as B2B, G2G which were just general terms. Candidates were also seen to misunderstood the concept of e-Government when they provided online banking and e-wallet as e-Government services.

Comments on the individual questions

Question 1

Candidates were asked to name and describe two basic components of system software. This was an easy question with direct answers but there were candidates who had wrongly interpreted the questions (the term "types of system software") and gave examples of operating system (OS) instead.

Question 2

This question consists of three parts. Candidates were asked to state the type of an email received by the user, suggest three actions that should be done by the user when he received the email and state two impacts of the email to the user. This was supposed to be an easy question but there were candidates who answered the questions in the positive sense. This may be due to their lack of experience. As for part (*c*), the question asked for impact, in which the solution was only technical behavioural impact, whereas there were candidates who provided varied answers including psychological impact.

Question 3

This question consists of two parts. For part (*a*), candidates were asked to compare the storage capacity and access speed between compact disk and world wide web. Candidates answered this question easily but they lose mark due to part (*b*)(ii), which involved calculation. They had overlooked the need to change from bits to bytes when doing calculations. As for part (*b*)(i), some candidates had overlooked that a CD could store a 5 GB file. Also, they had overlooked to place the term external to their answers of hard drive that can allow portable file sharing.

Question 4

This question consists of three parts. For part (*a*), candidates were asked to explain the meaning of *phi phenomenon* that produced an animation effect. None of the candidates were seen to obtain full marks on part (*a*) and no candidates obtained any marks for part (*c*) which asked the candidates to describe the technique of animation used in the diagram provided. Most of the candidates were able to answer correctly in part (*b*) which asked the candidates to state three basic principles of animation.

Question 5

This question consists of two parts. Most candidates managed to score both parts as they could identify between linear and a hierarchical navigation. For part (*b*), the question required candidates to list the task in idea analysis of a multimedia production without elaboration.

Question 6

This question was not a popular question among candidates. Those who selected this question was not able to obtain full marks due to technical drawing that lack correct labels. For part (b), the answers were on the FTP protocol, in which most candidates were able to answer HTTP.

Question 7

This question consists of three parts regarding e-government. Candidates were asked to state three advantages of e-Government services for the public, describe three other examples of e-government services and three challenges in the implementation of e-government. This was an easy question to obtain marks. The candidates answered it in a specific manner (i.e., not generic). All good, related and reasonable answers were accepted for this question.

INFORMATION AND COMMUNICATIONS TECHNOLOGY (958/2)

OVERALL PERFORMANCE

The number of candidates for this subject was 569. The percentage of candidates who obtained a full pass was 55.36%.

The achievement of candidates according to grades is as follows:

Grade	A	A–	B+	B	B–	C+	C	C–	D+	D	F
Percentage	13.01	5.80	4.39	5.45	8.61	6.68	11.42	5.10	3.34	7.38	28.82

CANDIDATES' RESPONSES

PAPER 958/2

General comments

The questions were well structured and readable.

In general, all the questions represented the contents of the ICT STPM syllabus and Bloom's Taxonomy which include low order thinking skills (LOTS) and high thinking skills (HOTS) questions.

Most candidates were able to provide partial answers to the questions. Common mistakes found include syntax errors and inability to trace code execution in order to derive output generated by the code. For section B, Question 6 was more popular than Question 7.

For section A: Questions 1, 2 and 3 could be considered easy. Only a few candidates did not answer the question correctly. The candidates may not have enough knowledge to answer the questions. For Question 4 some candidates were not able to answer the question and a few candidates were not able to construct a full programming solution which involve looping in program. For Question 5, the question was very straight forward and quite easy; candidates were able to develop the pseudocode based on the scenario.

For section B: Questions 6 and 7; the difficulty level was average to difficult but Question 6 was more popular than Question 7. A few candidates may have insufficient knowledge on the C programming language that they were not able to provide correct answers.

The difficulty level covered from LOTS to HOTS questions.

Many candidates were not able to provide a complete answer to every question. This was probably due to insufficient knowledge or practice using C programming language. Only very few candidates were considered very weak to not be able to answer most of the questions. The range of marks that the candidates receive is quite large between 2 to 50 marks. A few candidates were not able to apply the concepts in the C program. There were a few answers that contained many syntax errors. They could not answer the question correctly and some of them may not have full understanding about the question. Only very few candidates who did not attempt to provide answers to the questions.

Comments on the individual questions

Question 1

This question required candidates to determine the values of w, x and y for the C statements below:

```
(a) w = r / s > 5 && r + s;
(b) x = (colour == 'p');
(c) y = m * s + n − ( m + r ) / s;
```

The declaration statements in C are given as follows:

```
int r = 23, s =4;
float m = 2.4, n = 1.44;
char colour = "P";
int w, x;
float y;
```

Most candidates were able to answer this question, but only a few candidates answered correctly. A few candidates failed to write their answers based on declaration statement in C that are given.

Suggested answer

(*a*) 0
(*b*) 0
(*c*) 4.69

Question 2

Based on the function definition for calculateDiscount in C is given below.

```
float calculateDiscount (float price, int p)
float discount;
discount = price * p / 100;
return discount;
```

This question required candidates to:

(*a*) write a function prototype for calculateDiscount.
(*b*) write a statement that calls the function calculateDiscount and assign a returned value to a variable discountAmount.
(*c*) write a statement to print the returned value in (*b*).
(*d*) calculate the returned value using the function calculateDiscount if the values of price and p are 56.40 and 25 respectively.
(*e*) state the meaning of functions in programming.

The question was quite straight forward but there were candidates who could answer the question correctly. Some of them provided the prototype and call the functions with some missing statements or provide statements with syntax errors. This may be due to their misunderstanding towards what was expected from the questions. They were also not able to understand clearly on the function concept. Most candidates were not able to provide the meaning of functions in programming correctly.

Suggested answer

(*a*) float calculateDiscount (float, int);
(*b*) discountAmount = calculateDiscount(itemPrice, disc);
(*c*) printf("Discount is %.2f", discountAmount);

(*d*) discount = price * p /100
             = 56.40 * 25 / 100
             = 14.10

(*e*) functions in programming is independent module that will be called to do a specific task.

Question 3

Based on the marks for Mathematics of a group of students are shown in the table below.

Marks	23	77	34	56	89	67	48	73

This question requires candidates to:

(*a*) write a statement in C to declare and initialise an array `mathematicsMark`.
(*b*) write a code segment in C to find the lowest mark in the array `mathematicsMark`.
(*c*) write a code segment in C to calculate the average mark in the array `mathematicsMark`.

This question was not that difficult but a few candidates were not able to answer the question correctly. A few candidates were not able to express their ideas clearly on the array concept. Many candidates were able to declare and initialise an array, but a few of them gave the incorrect array size and missed the semicolon (;). In part (*b*), most of the candidates were able to write a code segment in C to find the lowest mark in the array. In part (*c*), many candidates were able to get some marks for this part of the question; but some candidates overlooked that arrays are zero-indexed in for loop.

Suggested answer

```
(a) int result[] = {23, 77, 34 , 56, 89, 67, 48, 73};
(b) lowest = mathematicsMark[0];
    for(i = 1; i < 8; i++)
    {
    if(mathematicsMark[i] < lowest)
    lowest = mathematicsMark[i];
    }
(c) total = 0;
    for(i = 0; i < 8; i++)
    {
      total += mathematicsMark[i];
    }
    avg = total / 8.0;
```

Question 4

This question required candidates to:

(*a*) write a program in C that uses a `while` loop to display a table of distance in miles from 1 to 10 and their equivalent kilometers.
(*b*) rewrite the program in (*a*) by using `for` loop.

Few candidates were not able to answer the question and there were candidates who were not able to construct the full programming solutions when involving `while` and `for` loop in C program.

Suggested answer

(*a*)
```c
#include <stdio.h>
  float km; [1]
  float mile = 1;

  int main(){
    printf("Mile\t\tKilometer\n");
    printf("------------------------------\n");

    while (mile <= 10){
      km = (8.0 / 5.0) * mile;
      printf("%.2f \t\t %.2f\n", mile, km);
    mile++;
    }
  }
```

(*b*)
```c
#include <stdio.h>
  float km;
  float mile;

  int main(){
    printf("Mile\t\tKilometer\n");
    printf("------------------------------\n");

    for (mile = 1; mile <= 10; mile++){
     km = (8.0 / 5.0) * mile;
     printf("%.2f \t\t %.2f\n", mile, km);
    }
  }
```

Question 5

The purpose of this question was to assess the candidate's knowledge in designing an algorithm using pseudocode. Candidates were expected to be able to write pseudocode for the problem.

Many candidates were successful in writing the algorithm using pseudocode based on the scenario of years of service and the monthly salary as well as the total sales and commission of salespersons in a company.

Suggested answer

START
Read years of service, total sales
If years of service <= 5
   Then monthly salary = 1500
   Else if years of service <= 10
      Then monthly salary = 2000
      Else monthly salary = 3000
If total sales <5000
   Then commission = 10% of total sales (total sales * 10 /100)
   Else if total sales <=10000
      Then commission = 15% of total sales (total sales * 15 /100)
      Else commission = 20% of total sales (total sales * 20 /100)
Calculate total salary = monthly salary + commission
Print total salary
END

Question 6

Based on this information; a primary school keeps the information of students which consists of the names, birth certificate numbers, addresses and year of birth. This question required candidates to

(*a*) write a definition statement of struct `student` to store the above information.
(*b*) write a function `main` in C that
   (i) reads and stores information of 30 students into the `struct`.
   (ii) prints the list of the stored information of students from the `struct`.

Many candidates attempted to answer this question because the problem was quite straightforward. There were candidates who could answer this struct type question. Even though, many of the candidates were not skillful enough and may not really understand this topic.

Suggested answer

(*a*)
```c
struct student{
   char name[20];
   char birthCertificate[10];
   char address[20];
   int yearofbirth;
   };
```

(*b*)
```c
int main(){
   struct student studentList[30];
   printf("Entering record\n\n");
   for(int i = 0;  i<2;  i++){
     printf("Student Name: ");
     scanf("\n%[^\t\n]s", &studentList[i].name);
     printf("Student Birth Certificate: ");
     scanf("\n%[^\t\n]s", &studentList[i].birthCertificate);
     printf("Student Address: ");
     scanf("\n%[^\t\n]s", &studentList[i].address);
     printf("Student Year of Birth: ");
     scanf("\n%d", &studentList[i]. yearofbirth);
   }
   printf("\nDisplaying record\n\n");
   printf("Name \t\t Birth Certificate No. \t\t Address \t\t yearofbirth \n");

     for(int i = 0;  i<30;  i++){
      printf("%s\t\t%s\t\t%s\t\t%d\n",studentList[i].name,
   studentList[i].birthCertificate,studentList[i].address,
   studentList[i].yearofbirth);
     }
   return 0;
   }
```

Question 7

This question requires candidates to

(*a*) Draw a flowchart which accepts all product numbers and quantity of that product. Then calculate the retail price for each product and print the total retail price.
(*b*) Write a program in C for the flowchart that you have drawn in (*a*) using the `switch…case` statement.

Many candidates did not attempt to answer this question. This question seemed difficult because it required the candidates to plan on how to think logically and develop the solution using loop and `switch…case` statement. The candidates need to draw a flow chart according to the statements provided. Candidates need to use their skills to arrange the symbols correctly and completed the flowchart with the correct arrows from the start to the end. Only a few candidates leave the "True" or "False" statements at the choice symbol and the usage of the incorrect symbols caused the candidates to gain less marks even though they provided the correct statement on the symbols.

Suggested answer

(*a*) Flowchart diagram

(*b*)
```
#include <stdio.h>
double retailPrice, totalRetailPrice = 0;
int product, quantity;

int main(){

for (int i = 1; i < 4; i++){
  print ("Product %d", i);
  printf("Enter quantity sold: \n");
  scanf("%d", &quantity);
switch(i){
  case 1: retailPrice = quantity * 2.98;
  break;
  case 2: retailPrice = quantity * 4.50;
  break;
  case 3: retailPrice = quantity * 9.98;
  break;
  case 4: retailPrice = quantity * 6.87;
  break;
  default: printf("The product is invalid");
  break;
}
totalRetailPrice = totalRetailPrice + retailPrice;
}
printf("Total Retail Price: %.2lf \n", totalRetailPrice);
return 0;
}
printf("Total Retail Price: %.2lf \n", totalRetailPrice);
return 0;
```

INFORMATION AND COMMUNICATIONS TECHNOLOGY (958/3)

OVERALL PERFORMANCE

The number of candidates for this subject was 557. The percentage of candidates who obtained a full pass was 53.86%.

The achievement of candidates according to grades is as follows:

Grade	A	A–	B+	B	B–	C+	C	C–	D+	D	F
Percentage	9.34	4.49	3.05	5.92	8.62	8.98	13.46	12.75	7.00	14.00	12.39

CANDIDATES' RESPONSES

PAPER 958/3

General comments

In Section A, this section covered many important topics in Information Systems Development. The questions in this section also cover theoretical topics while most of the topics covered in Section B are practical in nature. Overall, most candidates chose Question 7 instead of Question 6. There were also examiners who were less satisfied with the candidates' answers. It is observed that the candidates were not ready to answer exam questions and not following the technique of answering questions.

Some candidates were also incapable to think outside the box especially when answering Question 1(*a*) and (*b*). For questions that require analysis and synthesis such as Questions 4(*b*) and 6, most of the candidates did not achieve high marks.

Comments on the individual questions

Question 1

The question required the candidates to state three characteristics of the expert system and state two advantages of the computerised systems over the manual systems. For part (*a*), most candidates answered three features of the expert systems as general information systems by not giving specifics to expert systems. While for part (*b*), the candidates could answer very well.

Question 2

This question consists of two parts. For part (*a*), candidates were required to describe two characteristics of good data. Most candidates were able to answer well while for part (*b*), candidates were required to explain two importance of data to the hospital. Many candidates described the advantages of information systems instead of the importance of data in the hospital.

Question 3

Based on the given statements, the question required the candidates to describe two advantages of the waterfall model and list two other system development methodologies that were involved in prototype development. For part (*a*), many candidates provided incomplete answers which cause them to lose marks.

For part (*b*), many candidates could answer well.

Question 4

This question consists of two parts. For part (*a*), candidates were required to state four responsibilities of a database administrator. Many candidates did not get full marks for this part. Most candidates did not differentiate between the role of database administrator and information systems developer. As for part (*b*)(i) regarding functional dependency, most candidates did not get full marks because of incomplete diagram. There were some candidates who did not differentiate between full and partial dependency.

Question 5

Based on the examiner's report, most of the candidates failed to explain about data definition language and data manipulation language in part (*a*). While for part (*b*), the candidates also could not answer well. Most candidates were more likely to answer the description of ALTER and DROP related to data instead of tables.

Question 6

This question was less preferred by candidates. Most candidates who chose to answer this question also did not get full marks. For part (*a*), the candidates were unable to identify the primary key and the foreign key correctly. For part (*b*), candidates were unable to explain referential integrity correctly with given statement. For part (*c*), most of the candidates could answer well and get full mark as the question required candidates to explain the importance of Shelf, Category and Status field in the given table.

Question 7

This question is an option for most candidates. Nevertheless, most candidates were unable to get full marks on this question. Most candidates applied Chen and Crows Foot notations in an ER diagram which resulted in losing mark. In addition, most candidates failed to identify associate entity in designing the ER diagram and resulted in losing marks as well on ER diagram design and database schema in part (*b*).

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