MAJLIS PEPERIKSAAN MALAYSIA
Malaysian Examinations Council

PELANGI

LAPORAN PEPERIKSAAN STPM 2024

Information and Communications Technology (958)

Information and Communications Technology

958/1

OVERALL PERFORMANCE

The number of candidates for this subject was 691. The percentage of candidates who obtained a full pass was 47.32%.

The achievement of candidates according to grades is as follows:

Grade	A	A–	B+	B	B–	C+	C	C–	D+	D	F
Percentage	5.30	2.87	2.12	3.93	9.53	9.53	14.04	18.14	9.08	13.16	12.30

RESPONSES OF CANDIDATES

PAPER 958/1

General comments

Generally, the question paper tested materials that were within the syllabus, with an appropriate level of difficulty. There was a combination of LOTS and HOTS questions that were well structured, with a ratio of 3:2:1. The language and terminology used were clear and should have been easily understood by the candidates. In Section B, most candidates opted to answer Question 7 instead of Question 6.

The question paper could be considered to have had a moderate level of difficulty overall. The difficulty level varied across questions with an appropriate distribution of HOTS and LOTS elements. Questions 1, 2 and 3 were generally easy, while Questions 4 and 5 were of moderate difficulty. Questions 6 and 7 were classified as difficult questions.

About 50% of the candidates answered the examination paper in English, 35% answered in Malay, and 15% used both English and Malay. Most candidates answered the questions in sequence and their responses were legible and comprehensible. Among those who used both languages, English was generally used for questions involving the use of ICT terminologies while Malay was used for questions requiring them to describe their logical thoughts, which understandably was easier as Malay is the national language. Several candidates who answered in Malay did not use the correct Malay terminology. For example, in Questions 2(*c*), 4 and 7(*b*), they used the terms "*tiada data*" or "*tiada network*" instead of the correct term "*tiada capaian internet*."

For candidates who scored well, several of them provided answers by first listing the points and then writing the description or explanation below each point, showing clarity in their thought process. For questions that required them to provide "Difference...", "Positive", and "Negative" responses, some candidates presented their answers in table format which allowed examiners to see the contrast in their answers clearly. Weaker answers on the other hand were often too brief and incomplete resulting in a loss of marks. Several of these weaker candidates were also seen to reuse the question preamble as their answers.

Candidates' strengths were evident in their answers to Question 5, which required analysis of a screenshot based on UI design principles. Since the question paper provided only a grayscale screenshot and the use of colour is also an aspect of UI design, candidates had to describe other aspects instead. Sample answers included the ability to change the website's language preference (personalisation aspect) and the accompanying image used by the website (correct contextual aspect).

The weakness of the candidates was also apparent in responses to the same question which is Question 5. Some candidates gave answers related to the principles of design, which were not the correct principles to be referred to in this question. As in previous years, questions involving abstract concepts of design continued to be low-scoring for most candidates.

Most candidates chose Question 7 instead of Question 6. Among those who answered Question 7, several reused the same answers they had written for Question 4 (on online e-commerce) when responding to Question 7(*b*) (on online transactions).

Comments on the individual questions

Question 1

This was an easy question that tested candidates on the concept of multimedia. In part (*a*), candidates were required to provide the meaning of the term multimedia. Most candidates were able to answer this part correctly and obtained full marks, except for those who merely listed the elements of multimedia without providing a definition.

In parts (*b*) and (*c*), candidates were expected to suggest appropriate multimedia elements. Most candidates performed well and attained full marks. However, those who lose marks generally failed to relate their examples to the context provided in the preamble, which focused on road safety. Instead, they gave general or unrelated examples of multimedia usage.

Additionally, in part (*c*), several candidates appeared to have misunderstood the question by providing only one example despite being required to give two examples corresponding to the different media types they had mentioned in part (*b*).

Question 2

This question tested candidates' understanding of the concept of digital signatures in the context of e-documents. In part (*a*), candidates were expected to describe the benefits of using digital signatures. A complete answer should have included key benefits such as authentication (verifying the identity of the sender), security (protecting data from tampering), integrity (ensuring the document has not been altered) and non-repudiation (preventing the sender from denying authorship).

In part (*b*), candidates were required to identify the legislation that governs digital signatures in Malaysia. The correct response was the Digital Signature Act 1997.

Part (*c*) required candidates to compare the characteristics of digital signatures with conventional signatures. A good response should have highlighted that digital signatures are encrypted, secure and used in online environments, whereas conventional signatures are physical, can be easily forged, and are used on paper documents. Candidates who answered well were able to clearly distinguish the two in terms of security, reliability and medium of application.

Weaker answers were typically too brief and lacked elaboration. Some candidates merely stated general points such as “save time” or repeated the same point in different wording, without addressing the core aspects of digital signatures. Additionally, several candidates provided answers that referred to the use of digital signatures within web browsers specifically those related to digital certificate authentication. While these responses showed a good understanding of digital signature mechanisms, they were not relevant to the specific context of the question, which was focused on digital signatures in electronic documents.

Question 3

In part (*a*), this question provided a sample website URL and required candidates to identify specific components such as the protocol, domain and directory. Most candidates who attained full marks demonstrated a clear understanding of website structure and the ability to accurately differentiate between each component. However, several candidates confused the protocol with the domain, resulting in a loss of marks. Additionally, there were candidates who misidentified the directory often mistaking it for the domain or for a file extension which led to incorrect answers.

Part (*b*) required candidates to differentiate between HTTP and HTTPS. Candidates were expected to explain the key difference based on the security feature associated with HTTPS. While some candidates managed to provide the correct distinction, many weak candidates failed to address the security aspect. A significant number of responses reflected misunderstandings, with incorrect statements such as "HTTPS is a private protocol and HTTP is a public protocol," which indicated a lack of fundamental knowledge regarding internet communication protocols.

Question 4

This was a moderate-level question that required candidates to explain the advantages and disadvantages of delivering content through digital platforms for marketing purposes in the context of e-commerce. Most candidates were able to relate well to advertising via social media platforms. However, they encountered difficulty when asked to explain the same aspects in relation to television advertising.

Candidates generally understood that advertising through social media is more cost-effective compared to television advertising. They also demonstrated awareness of its ability to reach a global audience and the speed at which content can be shared and spread widely, commonly referred to as virality which is not achievable through traditional television advertisements.

Despite this, many candidates lose marks when explaining the aspects related to television advertising. Weak responses tended to focus on surface-level demographic contrasts such as stating that social media attracts teenage audiences because many young people use it while older adults are less familiar with it and prefer television. These types of answers lacked deeper insight into the strategic considerations of marketing effectiveness across platforms.

Question 5

This question proved to be challenging for most candidates, as many struggled to explain user interface (UI) design features based on the website screenshot provided. A significant number of candidates lose marks because their answers went beyond the context of UI Design Principles and instead focused on the Principles of Design which were not relevant to the question.

Correct responses should have included UI features such as navigation menus that allow users easy access to various sections, search bars to facilitate quick content lookup, icons or graphics that enhance usability and a clear layout that organises content into structured sections such as news and services. Good candidates were able to describe specific UI features used in the website and explained how these features contributed to overall usability. These responses demonstrated both understanding and application of the question requirements.

In contrast, weaker candidates merely listed UI elements without describing their functions or relating them to the screenshot. Some answers were overly general, lacking context or clarity. Many candidates misunderstood the term user interface, interpreting it as simply referring to website design in a visual sense without addressing interactive or functional aspects. As a result, many candidates received very low marks for this question.

Question 6

This was one of the more difficult questions in the paper and was not chosen by many candidates. In part (a), candidates were expected to identify the principle of animation based on the given scenario. The suggested answer was Staging. In part (b), they were required to explain the principle identified in part (a). This question tested candidates' understanding of the Principles of Animation. Most candidates were unable to name the animation principle and thus missed the marks for part (b), as it required a description based on their answer in part (a). Several candidates received partial marks for part (b) but did not include the key points needed to fully explain the impact of the animation principle.

However, performance in part (c) was generally better. Most candidates were able to recall and list other types of animation principles correctly which only required factual recall without needing to apply the concepts in context.

In parts (d) and (e), candidates were expected to provide suitable types of camera shots that could be used to create the scenario and describe each of them accordingly. Most candidates gave partially correct answers, such as "medium shot" and "close-up shot". However, many failed to recognise that there are two distinct types of close-up shots. As a result, they included an unrelated camera shot as their third response. Additionally, several candidates showed confusion between camera shot types and camera movement techniques. For example, responses such as "Zoom In" were given, which refer to camera movement rather than camera shots and were therefore incorrect in the context of the question.

Question 7

In part (a), this question focused on fake news, a societal issue within the context of ICT. Most candidates found the question easy to answer, as they were able to relate it to their own understanding of current issues. Several candidates correctly listed valid methods to prevent the spread of fake news and supported their answers with appropriate explanations. However, there were also candidates who provided repeated or overly similar points or responded with very brief answers lacking explanation which led to the awarding of only partial marks.

Part (b) also enabled many candidates to gain full marks. The question asked for both a positive and a negative effect of online transactions on society, a familiar aspect of ICT in daily life. While many candidates addressed this well, there were several who failed to distinguish clearly between business impacts and societal impacts. Some candidates were observed to reuse answers from Question 4, which were more relevant to business contexts. A few responses lacked sufficient depth offering generic points such as "convenient", "saves time" or repeating similar ideas which resulted in a loss of marks.

In part (c), the question required candidates to suggest possible methods the government could implement to create job opportunities through ICT initiatives. This part tested candidates' analytical thinking particularly their ability to link government-driven ICT implementation with economic benefits and employment generation. Most candidates were able to gain marks for this question. However, weaker candidates gave generic responses or simply reused phrases from the question's preamble without offering meaningful analysis. Some responses failed to focus on the role of the government instead discussing unrelated sectors or providing ideas that did not involve or acknowledge government initiatives or collaboration.

Information and Communications Technology

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OVERALL PERFORMANCE

The number of candidates for this subject was 630. The percentage of candidates who obtained a full pass was 56.03%.

The achievement of candidates according to grades is as follows:

Grade	A	A–	B+	B	B–	C+	C	C–	D+	D	F
Percentage	11.20	5.92	6.88	6.88	9.76	6.72	8.67	6.87	4.16	10.08	22.86

CANDIDATES' RESPONSES

PAPER 958/2

General comments

The overall quality of the paper was good, with questions well-structured and clearly aligned with the STPM ICT syllabus. The paper effectively balanced questions across various cognitive levels in Bloom's Taxonomy, ranging from lower-order skills such as recall and identification to higher-order skills involving problem-solving, code construction and data manipulation. The instructions and programming-related terminology used were clear and accessible, enabling most candidates to understand the questions without confusion.

In Section A, Questions 1 and 2 were relatively easy and widely attempted. Most candidates were able to provide partially correct answers. However, some responses lacked precision particularly in terminology and syntax. A number of candidates struggled to write declarations or expressions using the correct C syntax. Question 3 which involved interpreting code and rewriting it using a different loop structure proved more difficult. Many candidates misunderstood the program's purpose or were unable to convert the code correctly despite understanding the logic. Question 4 which tested array operations, revealed that a number of candidates lacked confidence in manipulating arrays. In Question 5, although many candidates understood the concept of functions, errors in function calls, data types and structure were common.

Section B, which included Questions 6 and 7, assessed higher-order thinking skills and required a more in-depth application of programming concepts. Question 6 focusing on the use of structures, reading input and performing calculations based on conditions, was generally well-attempted. While many candidates could define and declare structures properly, a significant number had difficulty with filtering data or calculating totals based on conditions. Question 7 which required both pseudocode and a full C program tested logical thinking and decision-making. While most candidates attempted this question, only the stronger ones could provide a fully functional solution with correct logical structure and syntax.

Most candidates attempted all questions and English was used consistently in their answers. Common weaknesses across the scripts were frequent syntax errors, undeclared or mismatched data types and the inability to translate logic into structured and executable code. Only a small portion of candidates showed very limited understanding or left many parts unanswered. Overall, the majority demonstrated basic comprehension but required further reinforcement in programming logic, code accuracy and practical application of key concepts in the C language.

Comments on the individual questions

Question 1

In part (*a*), candidates were expected to provide a definition or explanation of the terms computer program and programming languages. Most candidates were able to offer some explanation, though not always with precise wordings. Many responses demonstrated basic understanding such as recognising that a computer program consists of instructions executed by a computer and that programming languages are tools used to write such instructions. The suggested answer for a computer program is "a set of instructions that tells a computer what to do," and for a programming language, "a formal language used to write computer programs."

In part (*b*), candidates were required to name the programming language for each generation from the second to the fifth. The suggested answers are: Assembly language for the second generation, high-level procedural language for the third, problem-oriented language for the fourth and natural language for the fifth. However, if candidates provided the names of specific programming languages (such as Assembly for 2nd, C or COBOL for 3rd, SQL for 4th, or Prolog for 5th), these were also accepted as valid responses. Most candidates were able to answer this part correctly for the second and third generations, though some confusion was observed with the later generations.

Part (*c*) required candidates to write declaration and initialisation statements in C. For (i), the statement should declare a constant for the value of pi. The suggested answer is `const float PI = 3.142;`. For (ii), candidates were expected to declare a variable suitable for storing a 12-digit student identification number. The suggested answer is `long long studentID = 123456789012;`. Candidates who used a `char array`, such as `char studID[13];`, to represent the ID as a string were also considered acceptable. While most candidates attempted this part, some missed marks due to incorrect data types or syntax errors, particularly in using the correct format for constant declaration.

Question 2

In parts (*a*) and (*b*), candidates were required to evaluate and express a given arithmetic expression in C programming. The expression involved integer variables `m`, `k` and `y`, and required understanding of operator precedence and correct syntax in C.

In part (*a*), candidates were expected to manually show the step-by-step operations to determine the value of `x` using the given values: `m = 9, k = 10`, and `y = 2`. Most candidates were able to substitute the values correctly. However, some struggled with interpreting the original expression structure due to the unconventional notation used in the question. Candidates who clearly applied the correct order of operations especially handling nested parentheses and arithmetic precedence generally scored full marks.

In part (*b*), candidates were asked to write a C code segment to read three integer inputs and calculate the value of the given arithmetic expression. Better responses demonstrated correct use of input and output functions such as `scanf` and `printf`, appropriate variable declarations and accurate construction of the arithmetic expression using correct grouping and operators. Common mistakes included syntax errors, omission of parentheses and incorrect use of arithmetic operators. There were also candidates who wrote a complete program instead of the required code segment. Despite these issues, most candidates showed basic understanding of the logic and were able to provide partially correct responses.

Question 3

This question required candidates to analyse a C program and determine its behaviour and output. In part (*a*), candidates were expected to determine the output of the given program when the input value was 439. In part (*b*), they needed to identify the purpose of the program, and in part (*c*), they were asked to rewrite the same logic using a `while` loop instead of a `for` loop.

Only a few of candidates were able to correctly determine the output in part (*a*). This was largely due to errors in tracing the logic of the loop especially with how the program manipulated and built the new number using the modulus and division operations.

In part (*b*), several candidates struggled to explain what the program did to the input number. The expected answer was that the program reversed the digits of the input number but many responses lacked clarity or failed to interpret the overall function of the code. However, answers that referred to it as flipping the number, rearranging the number in opposite order or changing the digit arrangement were also considered acceptable.

For part (*c*), not many candidates were able to correctly rewrite the given `for` loop into a `while` loop. Some showed confusion in converting the loop structure and others failed to maintain the same logic in their rewritten code. Despite the low number of full marks awarded for this question, there were attempts that demonstrated partial understanding of the flow and function of the program.

Question 4

This question assessed candidates' understanding of array handling in C programming. Candidates were required to declare and initialise an array, find the maximum value within the array and calculate the total sum of the array elements.

In part (*a*), candidates were expected to declare and initialise an array containing the given prices. While a number of candidates managed to correctly declare the array with appropriate data types and values, some made syntax errors or incorrectly initialised the array.

In part (*b*), most candidates showed difficulty in writing the logic to determine the most expensive item from the array. Common mistakes included incorrect use of comparison operators, not updating the maximum value properly and confusion with array indexing.

In part (*c*), which required calculation of the total price of all items, better candidates demonstrated correct use of loops to iterate through the array and accumulate the total. However, several candidates either incorrectly declared the loop structure or did not initialise the total accumulator correctly. Overall, this question revealed that many candidates had a weak understanding of array manipulation with only a limited number being able to answer all parts correctly.

Question 5

This question tested candidates' understanding of user-defined functions in C, specifically focusing on function prototypes, calling functions from the main function and interpreting output based on input parameters.

In part (*a*), candidates were expected to write the function prototype for the given function. Most candidates were able to provide the correct format for the prototype, although a few omitted the return type or incorrectly placed the parameters.

In part (*b*), candidates were required to describe the purpose of the function `calculate`. While some candidates successfully stated that it performs calculations based on a selected option to find the area, volume or circumference, others gave vague descriptions that lacked clarity or missed mentioning all three possible calculations.

In part (*c*), candidates were required to write a `main` function that reads inputs and calls the `calculate` function. Many candidates managed to provide partially correct answers by including input statements and a function call, though some made errors in variable declarations or in reading character input.

In part (*d*), most candidates were able to determine the output correctly if the inputs were `5` and `V`. However, a few candidates miscalculated the volume of a sphere due to operator precedence issues or incorrect use of typecasting. This question revealed that while many candidates understood the basic idea of functions, there was still some lack of precision in syntax and in interpreting how the function behaves based on input values.

Question 6

This question assessed candidates' understanding of the `struct` feature in C programming and how to use it to store and manipulate structured data. Candidates were required to define a structure to hold player information, declare an array of that structure, input data for multiple players, calculate the total salary and filter data based on specific conditions.

In part (*a*), most candidates were able to correctly define the `struct player` structure, including appropriate data types for identification, name, year of birth, and salary. A small number of candidates omitted the `typedef` or used incorrect data types such as `int` for strings, but generally responses showed good understanding.

In part (*b*), many candidates correctly declared an array of the structure to store information for 45 players. However, a few candidates made errors in syntax or declared a regular array instead of a structured array.

In part (*c*), stronger candidates managed to write a complete code segment using loops to read the players' data and calculate the total salary. Weaker answers often included input errors or lacked accumulation logic to sum up the salaries.

In part (*d*), candidates were required to apply conditional checks and display player information that met a specific salary range. Many responses showed partial understanding with some candidates writing correct comparison logic but struggling to display all the required player details. Overall, while most candidates showed familiarity with the structure concept, the ability to implement logic to process structured data varied across responses. This question highlighted the need for stronger practice in applying structure-related operations beyond basic declarations.

Question 7

This question focused on problem-solving skills specifically determining a student's grade based on the average of three co-curricular activity marks. It tested candidates' ability to translate a grading logic into pseudocode and then into a working C program using conditional statements.

In part (*a*), many candidates demonstrated the ability to write logical pseudocode by including steps to read the three marks, calculate the final average, apply the appropriate conditional structure to determine the grade and print the results. Stronger candidates included clear and complete steps with proper sequence, while weaker answers often lacked essential components such as input, output or proper use of decision-making logic.

In part (*b*), candidates were expected to write a C program corresponding to their pseudocode. Most candidates were able to apply the `if...else` decision structure correctly to determine the appropriate grade based on the average mark. However, some candidates lose marks due to syntax errors, incorrect variable naming, missing return statements or misuse of the logical comparison operators. A few scripts showed difficulty in formatting the output or failed to display all required values including the three input marks, final average and grade. Overall, this question was generally well answered with most candidates demonstrating a basic ability to translate a problem-solving approach into code.

Information and Communications Technology

958/3

OVERALL PERFORMANCE

The number of candidates for this subject was 616. The percentage of candidates who obtained a full pass was 55.52%.

The achievement of candidates according to grades is as follows:

Grade	A	A–	B+	B	B–	C+	C	C–	D+	D	F
Percentage	10.23	3.90	2.44	6.49	8.60	13.64	10.22	13.47	11.53	6.49	12.99

CANDIDATES' RESPONSES

PAPER 958/3

General comments

This paper was well-structured and closely aligned with the STPM syllabus effectively covering a comprehensive range of topics related to Information System Development and Database Design. The questions reflected an appropriate balance between theoretical understanding and practical application with a deliberate distribution of lower-order thinking skills (LOTS) and higher-order thinking skills (HOTS). This ensured a fair assessment across cognitive levels from basic recall to complex analysis and synthesis.

The examination consisted of two sections: Section A focused on foundational knowledge and required concise definitions, comparisons, and SQL output interpretations. Section B assessed deeper understanding, problem-solving, and design skills through scenario-based and diagrammatic questions. While the overall difficulty level ranged from moderate to high, most questions were accessible to well-prepared candidates. However, some high-order questions particularly Question 6 Entity Relationship (ER) Diagram and Question 7 (Database System Approach) proved more challenging. Candidates struggled with identifying composite entities, assigning correct cardinalities and interpreting system conversion from a file-based to a database system.

The language used in the examination was appropriate for Form Six level with terminology that remained consistent with the ICT syllabus. The instructions were clear and unambiguous. Among the total number of candidates, 62.7% answered in English, 32.46% used Malay, and 4.84% responded using a combination of both. There was no notable difference in performance across languages indicating that language choice did not significantly impact comprehension or expression.

Overall, candidates' responses ranged from low to moderate quality. Good candidates showed good organisation using structured tables, diagrams and clear explanations particularly in Section A. In contrast, weaker responses lacked depth and completeness, often providing vague or partial answers. In several cases, especially in Questions 2 and 4, candidates showed a lack of understanding of basic

concepts such as functional dependencies, Data Dictionary, Data Manipulation Language, (DML), and Data Definition Language, (DDL). Many candidates left HOTS questions blank particularly Question 7 which revealed gaps in knowledge related to real-world applications and data operations such as sorting, validation and abstraction.

Comments on the individual questions

Question 1

This question tested candidates' understanding of the differences between manual and computerised systems. Most candidates attempted the question but many responses were brief and lacked sufficient explanation. A common weak answer was simply stating, "manual uses paper, computerised uses a system," without elaborating on key aspects such as efficiency, accuracy or data handling.

Some candidates confused the task by listing unrelated advantages and disadvantages rather than making direct comparisons. These responses typically earned only partial marks. Stronger candidates demonstrated a clearer grasp of the concept by using structured comparisons, often in table form to highlight differences such as speed of processing, storage methods, error rates and automation. These answers were generally well-developed and easier to assess.

Question 2

In part (*a*), candidates were required to describe three types of functional dependencies: full, partial and transitive. Many candidates attempted the question but faced challenges in clearly distinguishing between full and partial dependency. A common issue was the lack of clarity in defining full dependency, where some failed to state that the attribute must depend on the entire composite primary key. For partial dependency, many responses were vague and did not mention that the attribute depends only on a part of the composite key. This resulted in answers that lacked precision.

On the other hand, the explanation of transitive dependency was generally well handled. Most candidates correctly explained that a non-key attribute depends on another non-key attribute through the primary key. While part (*a*) was more challenging, part (*b*), which required examples for each dependency, saw mixed performance. Some candidates gave accurate examples but others provided unclear or unrelated ones that did not align with their definitions.

Question 3

This question was generally well answered by most candidates. In part (*a*), many candidates were able to correctly state three common methods for determining user requirements such as interviews, questionnaires and observation. These responses showed that candidates had a basic understanding of the tools used during the analysis phase of the system development life cycle.

However, in part (*b*), a number of candidates struggled to provide sufficient justification when describing the advantages and disadvantages of each method. While the methods were correctly identified, the elaboration was often brief or lacking in clarity. For instance, some candidates gave overly general points such as "easy to use" or "saves time" without linking them directly to the method. Good candidates were able to explain the relevance of each method in the context of information gathering, providing logical reasoning to support both the benefits and limitations. Overall, while the question was accessible, better depth was needed for full marks.

Question 4

Performance on this question varied, with several candidates struggling to demonstrate a clear understanding of database-related concepts. In part (*a*)(i), many candidates had difficulty explaining the role of a data dictionary. Only a few correctly referred to it as metadata that stores information about database structure such as tables, fields, data types and relationships. A common weak response was defining it vaguely as a tool to store data which failed to address its true purpose in database systems.

In parts (*a*)(ii) and (*a*)(iii), candidates often confused the roles of DML and DDL. While some responses accurately described DML as commands used to retrieve, insert, update or delete data and DDL as commands to define or alter database structures, others provided mixed-up explanations or lacked supporting examples. This confusion extended into part (*b*), where candidates were asked to give examples of DDL statements. Although the preamble in part (*b*) served as a hint, not all candidates recognized this resulting in missed opportunities to score. Including correct examples such as `CREATE`, `ALTER` or `DROP` would have demonstrated full understanding.

Question 5

Overall, most candidates demonstrated a satisfactory understanding of SQL syntax and command structure. In part (*a*), many were able to correctly identify and filter rows with profit values less than or equal to 900,000,000. However, some lost marks due to incorrect sorting of the output as they did not arrange the data in ascending order based on the `Profit` field as required. In some instances, candidates simply copied the query from the question without executing it to determine the correct output leading to incomplete or incorrect responses.

In part (*b*), the two-step operation required candidates to perform an `UPDATE` followed by a `SELECT`. Although several candidates wrote the SQL statements accurately, some failed to interpret and show the correct output after the update. Common errors included not changing the distributor name from "Disney" to "Disneyland" in the affected rows or not displaying only the updated records.

Part (*c*) was more straightforward, and most candidates were able to apply the `LIKE` clause correctly to filter titles beginning with "The". However, a few responses misused the wildcard character or misunderstood the syntax resulting in either no output or incorrect matches. Full marks were awarded to those who could display the correct records that matched the pattern.

Question 6

This question was among the most popular choices in Section B, with many candidates attempting it. While a large number of candidates demonstrated a basic understanding of ER diagrams, only a few managed to provide a complete and accurate representation based on the form provided. Most candidates correctly identified and labelled entities such as `Staff`, `Branch` and `Position` and used appropriate symbols for entities and relationships. Primary keys were also generally well indicated.

However, the most significant challenge was identifying the presence of a composite entity (e.g. `Experience`) that links `Staff`, `Branch` and `Position` over time. Many candidates failed to recognize this instead attempting to connect entities directly without an associative entity which led to incorrect or incomplete relationships and structural issues in the diagram.

Additionally, candidates frequently struggled with assigning the correct cardinalities between entities. For example, some incorrectly indicated one-to-one relationships where many-to-many were more appropriate. In part (*b*), mapping the ER diagram to relational schema was not well executed by some candidates as the incorrect ER structure carried over and affected their schema. While most candidates managed to write basic table structures, the absence of a composite entity led to missing or inaccurate relational tables.

Part (*c*), which required the identification of foreign keys was inconsistently answered. While a few candidates correctly stated the foreign keys in the linking table, many left this section incomplete or gave incorrect references due to earlier diagramming errors. Despite widespread attempts, no candidate achieved full marks for this question as most fell short in constructing an accurate and normalised ER model.

Question 7

This question was the least attempted among all and overall candidate performance was notably weak. Many candidates appeared unfamiliar with the file processing system model shown in the question and struggled to apply theoretical knowledge to the practical scenario. This reflects a gap in understanding how real-world systems transition from traditional file-based approaches to modern database systems.

In part (*a*), candidates were expected to explain the importance of data to school management such as enabling informed decision-making, monitoring student involvement and supporting planning and reporting. However, responses were often too general or unrelated to the context of school management. Only a small number of candidates were able to provide contextually relevant explanations.

Part (*b*) required candidates to describe three data operations such as sorting, validation and abstraction, and to give one relevant example for each. This part was not well answered. While some candidates managed to mention one or two of the operations, many failed to elaborate or provide suitable examples. A number of responses confused these operations with basic SQL actions like `INSERT` or `DELETE` indicating a misunderstanding of the concept of data operations in this context.

In part (*c*), most candidates could state at least one disadvantage of the file processing system approach such as data redundancy or lack of data integrity. However, few could elaborate on these points clearly or identify a second disadvantage accurately. Explanations often lacked technical depth or relevance.

Part (*d*), which required drawing a replacement diagram using a database system approach posed the greatest challenge. Many candidates left this section blank or drew vague diagrams lacking clear relationships between entities. Diagrams often did not indicate centralised data storage or the integration of systems that is typical of a database management system (DBMS). Only a few candidates demonstrated a basic understanding by placing entities around a central database with clear connections.

Overall, this question exposed candidates' weak grasp of database application in real-world scenarios particularly system conversion and data modelling. Future candidates would benefit from more exposure to practical system diagrams and hands-on modelling tasks.

LAPORAN PEPERIKSAAN STPM 2024

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