

FORM TP 2012209



TEST CODE 02129020

MAY/JUNE 2012

CARIBBEAN EXAMINATIONS COUNCIL
ADVANCED PROFICIENCY EXAMINATION

INFORMATION TECHNOLOGY

UNIT 1 – Paper 02

2 hours 30 minutes

02 MAY 2012 (p.m.)

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. This paper consists of THREE sections and NINE questions.
2. Answer ALL questions.



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02129020/CAPE 2012

SECTION I – FUNDAMENTALS OF INFORMATION TECHNOLOGY

Answer ALL questions.

1. Automated information processing techniques using technologies and tools are critical for working with data.

(a) Explain what is meant by 'information processing' in the context of information technology. [2 marks]

(b) A Decision Support System (DSS) is one type of information system used by organizations.

(i) State THREE other types of information systems. [3 marks]

(ii) Explain the MAIN function of ONE type of information system listed in (b) (i) above. [2 marks]

(c) The Ministry of Health in your country has just completed a survey in six remote communities. Printed questionnaires were administered by trained field workers. The completed questionnaires were returned to the main office for data entry into an automated information system. As the Information Management Officer of the project, you are responsible for ensuring that the data from the questionnaires are entered into the information system.

(i) List TWO data capture methods that may be used to enter the data from the questionnaires into the information system. [2 marks]

(ii) It is possible that data on the questionnaires will be illegible or that data entry clerks may enter incorrect data. Outline THREE ways to ensure that only accurate data are entered and stored in the information system. [6 marks]

Total 15 marks

2. Information is an important asset for the effective and efficient operation of an organization.

(a) For EACH of the following types of information, identify the likely users and the purpose for which the information is used.

(i) Strategic [2 marks]

(ii) Tactical [2 marks]

(iii) Operational [2 marks]

- (b) With reference to an Automated Teller Machine (ATM) system of a commercial bank, state ONE example of EACH type of information described in (a) above. [3 marks]
- (c) A professor prepares a report for delivery at a conference using a presentation tool. He is now unable to attend the conference but will forward the report for viewing by the participants.

Outline THREE ways in which the presentation may be enhanced for maximum impact in his absence. [6 marks]

Total 15 marks

3. Social networking sites, such as Facebook, allow end users to connect with friends and family in real time.

- (a) Apart from chatting, outline THREE other ways in which students and teachers can use social networking sites to enhance the teaching and learning process. [6 marks]

- (b) (i) List TWO hardware components that are required by a computer to connect to the Internet. [2 marks]

- (ii) The development of mobile phones has made it possible to access the Internet from any location. Discuss TWO advantages and TWO disadvantages of using the mobile phone to access the Internet.

[8 marks]

- (c) A student is working from an Internet café on a project. Explain how the student may execute EACH of the following tasks:

- (i) Making a video file of size 50 MB immediately available to other students in the class. [2 marks]

- (ii) Accessing a software program on the school's server to complete an assignment. [2 marks]

Total 20 marks



SECTION II – INFORMATION TECHNOLOGY SYSTEMS

Answer ALL questions.

4. (a) One desirable feature of the software component of an information technology system is portability. Define the term 'software portability'. [2 marks]
- (b) The speed of an information technology system is dependent on the characteristics of its components. For EACH component listed below, state ONE characteristic that can affect the speed of an IT system.
- (i) Hardware [1 mark]
 - (ii) Software [1 mark]
 - (iii) User [1 mark]
- (c) Biometrics is an approach used to authenticate users of information systems.
- (i) State TWO biometric scans that can be used to authenticate users. [2 marks]
 - (ii) Discuss TWO **major** concerns that users may have with respect to a biometric-based authentication system. [4 marks]
 - (iii) Some systems use a combination of biometrics, username and password to authenticate users. Outline TWO advantages of including biometrics together with the username and password. [4 marks]

Total 15 marks

5. The Human Computer Interface (HCI) of an information technology system is critical to the overall performance of the system.
- (a) Some computer software packages offer both Graphical User Interface (GUI) and Command Line Interface (CLI) to carry out a task. Explain TWO reasons why a user may choose to use the CLI instead of the GUI method. [4 marks]



- (b) An online university registration system requires new applicants to enter various pieces of information including the age of the applicant.

(i) Identify TWO GUI features that can be used to capture the age of an applicant. [2 marks]

(ii) For ONE of the features identified in (b) (i) above, state ONE advantage of using this feature. [1 mark]

(iii) State TWO disadvantages of placing **help information** on a user interface. [2 marks]

- (c) You have been contracted by your Ministry of Culture to develop a software application to teach a group of vendors in a marketplace to use computers. Outline THREE important characteristics of the users of this system that should be considered when designing the user interface. [6 marks]

Total 15 marks

6. (a) Several protocols are essential to the functioning of the Internet. For EACH acronym below, state its meaning and its function in relation to the Internet.

(i) HTTP [3 marks]

(ii) TCP [3 marks]

(iii) IP [3 marks]

- (b) (i) Using a suitable example, explain EACH of the following terms:

a) IP address [2 marks]

b) Domain name [2 marks]

(ii) Outline ONE reason why using the domain name over an IP address is the preferred method to access web pages. [2 marks]

- (c) For the World Wide Web (www) to exist as an organized collection of resources, a relationship exists among the key components.

Describe the relationship among the three key components of the World Wide Web listed below.

- (i) Website
(ii) Web page
(iii) Hyperlink [5 marks]

Total 20 marks

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SECTION III – INFORMATION AND PROBLEM SOLVING

Answer ALL questions.

7. Problem solving is defined as the process used for finding solutions to daily problems.
- (a) (i) State TWO considerations in selecting the MOST optimal solution to a problem. [2 marks]
 - (ii) Outline ONE activity that takes place during the review stage of the problem solving process. [2 marks]
 - (b) To effectively solve problems, quality information is necessary. List THREE criteria for accepting or rejecting information used during the problem solving process. [3 marks]
 - (c) Your neighbours have a one-year-old baby who suffers from an undetermined health condition. To learn more about the problem, they have started consulting Internet sources for information. Describe TWO characteristics of information sources that must be considered as they search the Internet. [4 marks]
 - (d) A detailed report was submitted to the teacher of a school by an invigilator. The extract below was taken from the report.

Damian Shaw who lives at 11 Arbor Lane, Roseau, came into the CAPE Information Technology (IT) examination room wearing his school uniform. He sat next to Trudy Clarke. Thirty minutes before the examination was due to finish, he was seen reading an IT textbook.

- (i) Based in the extract, identify ONE example of EACH of the following types of information:
 - a) Extraneous
 - b) Desirable [2 marks]
- (ii) Identify TWO categories of information other than those mentioned in (d) (i) above. [2 marks]

Total 15 marks



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8. (a) (i) Define the term 'data flow diagram'. [1 mark]
- (ii) Outline TWO differences between a 'context level data flow diagram' and a 'first level data flow diagram'. [4 marks]
- (b) A farmer is researching ways to increase his yearly income.
- (i) Identify TWO pieces of information that can help the farmer improve productivity. [2 marks]
- (ii) For EACH piece of information listed in (a) above, discuss the MOST appropriate source the farmer should consider for obtaining the required information. [4 marks]
- (iii) Outline TWO ways in which access to the Internet can support farmers in improving productivity. [4 marks]

Total 15 marks



9. (a) Three of the programming paradigms for developing software are the procedural, object-oriented and the functional paradigms.
- (i) Explain any TWO of the paradigms listed above. **[4 marks]**
 - (ii) Give an example of a programming language for EACH paradigm explained in (a) (i) above. **[2 marks]**
- (b)
- (i) Explain the function of a 'loop' in a block of program code. **[2 marks]**
 - (ii) Describe ONE error that may cause a program to run infinitely. **[2 marks]**
 - (iii) Documenting program code is a very important stage in programming. Outline TWO problems that may arise if programmers do not document source code. **[4 marks]**
- (c) Figure 1 shows an algorithm.

```
1. Prompt user to enter value for P
2. Input P
3. Prompt user to enter value for N
4. Input N
5. A = 0
6. For Count = 1 to N do
7.     A = Count + P
8.     P = P + 1
9. Endfor
```

Figure 1

The user enters 3 and 4, respectively. The table below shows the values of Count, A and P after one iteration.

Count	A	P
1	4	4

Copy the table in your answer booklet and complete it to show the values **after EACH** iteration for the duration of the algorithm. **[6 marks]**

Total 20 marks

END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.