



For Performance Measurement

ADVANCED LEVEL

COMPUTER SCIENCE

6023/01

NOVEMBER 2022

EXAMINER REPORT

Introduction

This report aims to assist and guide teachers and learners in the teaching and learning of Computer Science as a learning area.

General Comments

1. Candidates need to pay attention to technical terms associated with the Learning Area.
2. It is very important that candidates read the questions carefully and understand the demands of the questions. This will guide the candidates to know the type of answer required; for example, the action verb **State** may require a single statement whereas the action verb **Explain** requires a sequence of coherent statements highlighting the key elements of a concept examined.
3. In general, most candidates performed well. They were able to demonstrate in-depth understanding of examined concepts. However, some of the candidates had difficulties in applying the knowledge in addressing the needs of some questions e.g candidates struggled to dry run a given flowchart and some again failed to correctly assign data items on a binary tree.

Specific Question Comments

Question 1

- ai) This question was well answered with the majority of candidates able to correctly give the difference and the similarity between ASCII and Unicode.
- ii) The majority of candidates correctly stated the number of bits by an EBCDIC character.
- bi) The majority of candidates correctly answered this question. Expected answer **01111000₂**
- ii) This question posed no problems for the majority of candidates. Expected answer **00010101₂**

c) Both parts of this question posed no problems for the majority of candidates. The majority of candidates who managed to answer part (i) could correctly answer part (ii).

Expected answer (i) **00101100₂**

d) This question was not well answered as the low performers failed to score a mark.

Question 2

- a) The majority of candidates were able to define IP address.
- b) This question was well answered. The majority of candidates were able to explain the purpose of the IP address.
- c) Generally, well answered. Most candidates were able to distinguish between public and private IP address.
- d) This question was well answered and many candidates were able to describe that the network component identifies the specific network to which the host/device is attached and Host component uniquely identifies a host/device within a network.

Question 3

- a) Most candidates knew that a protocol is a set of rules. Fewer candidates could go on to say that these govern the transmission of data.
- b) The question was effective in that it acted as a good discriminator between candidates. The protocol supports the e-mail and helps you to send the data to another e-mail address that is it handles email transmission used to send from client to email server and from one email server to another server.
- c) Generally, most candidates managed to state the functions of the data link layer.

Question 4

- a) There were a number of correct answers to this question, but some candidates need to improve their understanding of how interrupts may be generated.
- b) The majority of candidates were able to draw the diagram representing a Von Neumann Architecture, they managed to explain how it differs with the Harvard Architecture.

Question 5

This question was well answered; the question required the candidates to draw a logic circuit from a list of conditions given, however, some of the drawings of the logic gates needed further improvement in the neatness and clarity of the logic diagrams. Candidates need to realise that Examiners have to interpret the shapes of the logic gates that are drawn – for example, if the gate drawn was a mixture of an AND gate and an OR gate (which was unfortunately fairly common) then no mark could be awarded. Also, marks were lost for careless mistakes such as not drawing the NOT gate properly. Some candidates used circles with the words NOT, AND and OR inside the circles.

The second part of the question was about truth tables and is a skill that has consistently improved over the years.

Question 6

- a) Many candidates did not perform well on this question it was clear that the majority of candidates were not aware of e-waste. This question was about defining e-waste which is consumer and business electronic goods that are near or at the end of its life.
- b) Justice was not done to this question by the majority of the candidates as they could not discuss the social and economic impact of e-waste business to the immediate community.
- ci) Candidates need to take care with the wording of their answers, answers which re-iterate the term being defined such as, '*the privacy of data means keeping the data private*' are not enough of a description to gain credit at this level. Privacy is the need to restrict access to personal data to avoid it being seen by unauthorized people.
- ii) The majority of candidates were able to state the two-business ethics.

Question 7

- a) Candidates provided mixed responses to this question part. Some candidates were able to follow the algorithm and add the correct nodes in the correct places. Some candidates labelled the nodes in the order they were on the question paper, instead of the order that data items were added to the tree using the algorithm. Some candidates did not use Dumisani as the root node instead used the second node to be added to the tree as the root node.
- b) The question required candidates to 'describe' and many candidates were only able to state. Single word answers are not enough for a description as most candidates were able to state the algorithm without describing it. The high performers were then able to go on to describe the in-order algorithm.

Question 8

- a) Fairly answered by most candidates. Most answers were presented as either pseudocode or a flowchart, while a few wrote code in a high-level language which would also answer the question. The low performers were not initializing their variables an area most candidates need to improve on.
- bi) This question was about dry running a flowchart and as such the concept had not been tested frequently. However, candidates did well with the majority gaining full marks. Some did not answer the question properly.
- ii) Candidates needed to understand the previous item in-order to get this item correct.

Question 9

- a) Most candidates had difficulty in expressing why database design is important.
- b) Many candidates were able to describe the three components and giving appropriate examples.

Question 10

- a) Most candidates answered this question well, giving the correct definition.
- b) This question was answered well.
- c) This question was very well answered with many candidates giving detailed explanations of the benefits of e-commerce for a small company.
- d) There were some excellent answers to this question. Most candidates explained the global changes in e-learning.