

Revision Sheet

A-Level Computer Science · Unit 12 Software Development

10 vocabulary items · 35 marks of exam questions (6 questions)

Part 1 · Vocabulary review (10 items). The terms this unit is examined on most. Mark it yourself from the answer key.

Section A · Chinese to English

Write the English word.

- | | | |
|-------------|-------|-----|
| 1. | _____ | [1] |
| 2. | _____ | [1] |
| 3. | _____ | [1] |
| 4. | _____ | [1] |
| 5. | _____ | [1] |
| 6. | _____ | [1] |
| 7. α | _____ | [1] |
| 8. β | _____ | [1] |
| 9. | _____ | [1] |
| 10. | _____ | [1] |

Part 2 · Exam questions (35 marks, 6 questions) begins on the next page. They are ordered easy to difficult and none of them has been set before.

11 A program is designed, coded and compiled without errors. The compiled code is sent for testing.

(a) The program will be tested using the walkthrough method.

Additional information will be needed before this method can be used.

Identify this additional information **and** explain why it is needed.

Additional information

.....

Explanation

.....

.....

.....

[3]

(b) Testing is completed and the program is made available to users.

Some time later, changes are made to the program to improve the speed of response.

State the type of maintenance that has been applied to the program.

..... [1]

- 12 A procedure, `FormatName()`:
- is called with a string containing words and spaces as its parameter. In this context, a word is any sequence of characters that does not contain a space character.
 - creates a new formatted string from this string with the following requirements:
 - Any leading spaces removed (spaces before the first word).
 - Any trailing spaces removed (spaces after the last word).
 - Any multiple spaces between words converted to a single space.
 - All characters converted to lower case.

The `FormatName()` procedure has been written in a programming language and is to be tested using the black-box method.

- (a) Give a test string that could be used to show that all **four** formatting requirements have been applied correctly.

Use the symbol '∇' to represent a space character.

..... [3]

- (b) The `FormatName()` procedure should assign a value to the global variable `FString`.

There is a fault in the program, which means that the assignment does not always take place.

Explain **two** ways of exposing the fault.

.....
.....
.....
.....
.....
..... [2]

- 13 A program stores a date of birth for a student using a variable, `MyDOB`, of type `DATE`.

- (a) `MyDOB` has been assigned a valid value corresponding to Kevin's date of birth.

Complete the pseudocode statement to test whether Kevin was born on a Thursday.

IF THEN [2]

- (b) A function `CheckDate()` will take three integer parameters representing a day, month and year of a given date.

The function will validate the date of birth for a student that the parameters passed to it represent.

For a date to be valid, a student must be at least 18 in year 2020.

- (i) Two of the parameter values can be checked without reference to the third parameter.

Describe these **two** checks.

Check 1

.....
.....

Check 2

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.....
.....
..... [2]

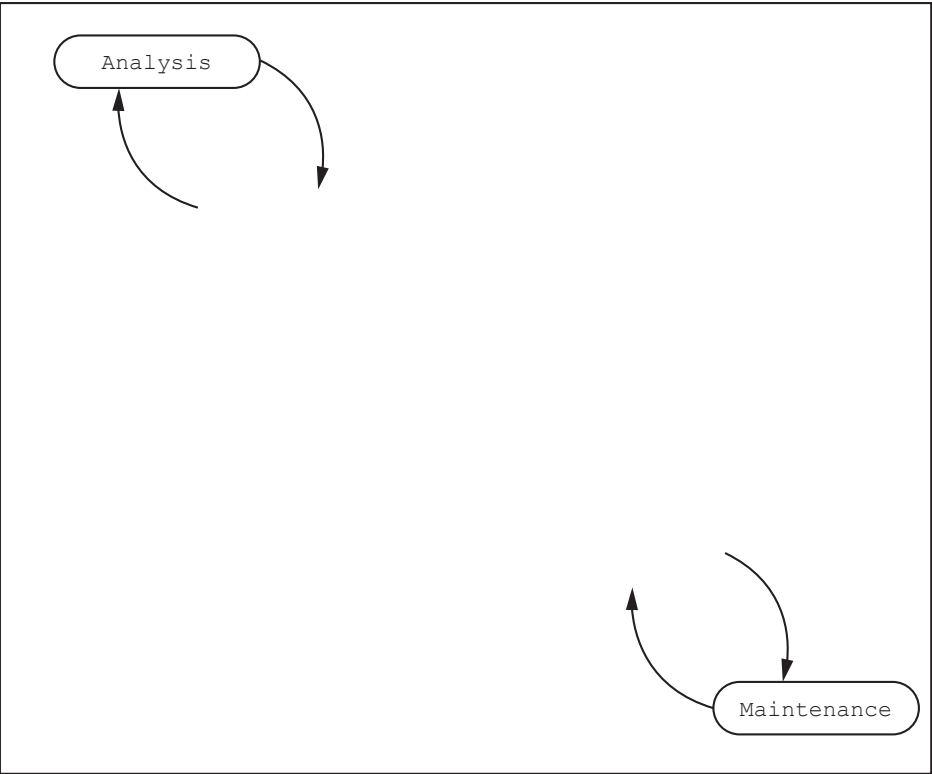
- (ii) Several values of the parameter representing the day can only be checked completely by referring to the value of **one other** parameter.

Describe this check.

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.....
.....
..... [2]

14 The following diagram shows the incomplete waterfall model of the program development life cycle.

(a) Complete the diagram.



[3]

(b) Explain the meaning of the downward and upward arrows.

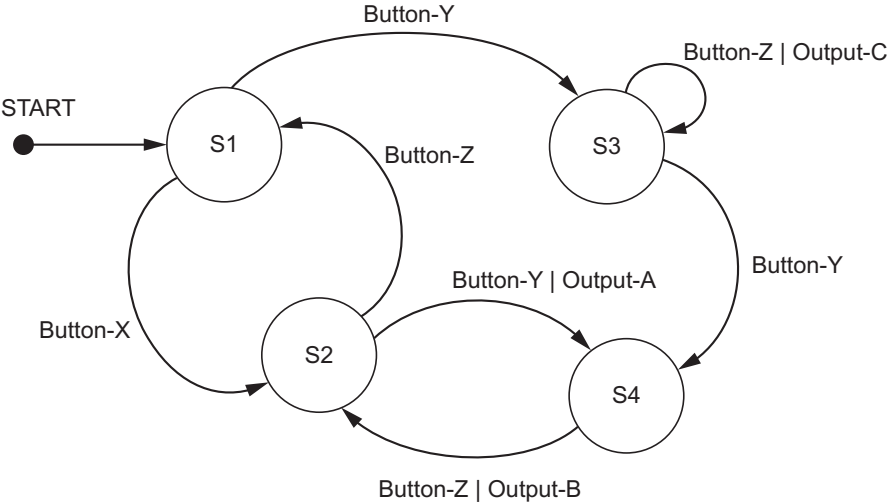
Downward arrows
.....
.....
Upward arrows
.....
.....

[2]

(c) Identify another type of model for the program development life cycle.

..... [1]

15 Examine the following state-transition diagram.



(a) Complete the table with reference to the diagram.

Answer	
The number of different inputs	
The number of different outputs	
The single input value that could result in S4	

[3]

(b) The initial state is S1.

Complete the table to show the inputs, outputs and next states.

Input	Output	Next state
Button-Y		
	none	
Button-Z		S2
	none	

[4]

16 Four program modules are defined as follows:

Pseudocode module header
PROCEDURE Sub1_A(XT : INTEGER, PB : STRING)
FUNCTION Sub1_B(RA : INTEGER) RETURNS BOOLEAN
PROCEDURE Sub1_C(SB : INTEGER, BYREF SA : STRING)
PROCEDURE Section_1()

(a) A structure chart will be produced as part of the development process.

Describe the purpose of a structure chart.

.....

.....

.....

..... [2]

(b) Module Section_1() calls one of the other three modules. The module called will be selected when the program runs.

Draw the structure chart.