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Teacher's Introduction

This resource is designed to support teaching and learning of the A Level AQA specification (for first teaching in September 2015; first exams from June 2017).

These end-of-topic tests are designed as factual tests to check your students' understanding as they complete each topic*. Their primary focus is not to provide exam-style practice, but instead to test the knowledge, skills and understanding required by the AQA specification in a variety of styles and complexities – ranging from simple short-answer questions through to longer essay-style questions.

**The tests could also be used for homework or revision, but their best use is as summative assessments.*

There are a total of 8 tests covering the prescribed specification content for *Paper 1* of the A Level AQA specification – each provided in worksheet format (with answer lines) and a more photocopy-friendly format (without answer lines), to give you flexibility of use.

The majority of tests are worth around 30-40 marks each, so that they can be completed within a single one-hour lesson.

Example answers are provided for every test. *Note that credit should also be given for any valid responses that are not explicitly included in this resource.*

4.1. Programming – Test 1

1. What data types would you use to best represent the following?

   a) A telephone number ..... [1]

   b) The name of a company ..... [1]

   c) The time that a file was last edited ..... [1]

   d) A set of test results (out of 100) for a class of 50 students ..... [2]

   e) Membership details of each member at a tennis club ..... [2]

2. a) Describe what is meant by a 'language-defined' function. [2]

   .....

   .....

   .....

   b) Give an example of a language-defined function for each of the following types of task:

      i. Arithmetic [1]

      .....

      ii. String Handling [1]

      .....

      iii. Conversion [1]

      .....

3. Consider the following basic pseudo code:

```
NoOfTurns ← Input                    (A)
IF NoOfTurns < 1 Then                (B)
    Output("Error – must be at least 1")
ELSE
    FOR X ←1 To NoOfTurns            (C)
        Output(X)
    ENDFOR
```

   Here is a list of statement types that can be used in programming languages:

   - Variable declaration
   - Constant declaration
   - Subroutine
   - Assignment
   - Iteration
   - Selection

   Identify what statement type best suits parts A, B and C of the pseudo code above. [3]

   A .....

   B .....

   C .....

4. You are writing a program for a local shop and you have been asked why you intend to use procedures and functions in your design. Give four advantages of using procedures and functions when writing computer programs. [4]

1 .....

.....

2 .....

.....

3 .....

.....

4 .....

.....

5. Explain the difference between a procedure and a function. [2]

.....

.....

.....

6. There are a number of programming paradigms which each have different advantages and disadvantages.

   a) Explain what procedural programming means. [2]

   .....

   .....

   .....

   b) A common process when developing a program using procedural-programming techniques is to define a data type and then write a number of functions which operate on that data type.

      i. What would be the object-oriented approach to this process? [2]

      .....

      .....

      ii. Give three advantages of using object oriented rather than purely procedural-programming languages in the development of large projects. [3]

      1 .....

      .....

2 .....

.....

3 .....

.....

c) What is the main difference between a class and an object? [2]

.....

.....

.....

d) Define the term encapsulation. [2]

.....

.....

.....

7. The Fibonacci sequence of numbers is defined as:

$$F_n = F_{n-1} + F_{n-2} \text{ where } F_0 = F_1 = 1$$

a) Write a recursive function called *fib* that accepts the number n as a parameter and returns the value of F_n. [5]

b) State an advantage and a disadvantage of using recursion to solve a given problem. [2]

Advantage .....

.....

Disadvantage.....

.....

Total marks = /39

