

3.2 Impact of Program Design

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS maintainable 可维护 • reliable 可靠

Objective

Build the skills to answer exam questions on **the impact of program design**.

You must be able to:

- explain that design choices affect how **reliable** 可靠 and **maintainable** 可维护 a program is
- describe how a program can have unintended consequences for users
- understand the value of testing with a wide range of inputs

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Why design matters

Good design makes a program more **reliable** (it works correctly) and **maintainable** (it is easy to change). Poor design can cause **unintended consequences** for its users.

■ Testing widely

Testing with a **wide range of inputs**, including edge cases, reveals defects that a few simple tests would miss.

2 Practice

2.1 State one quality that good program design improves. [1]

2.2 State why you should test with a wide range of inputs. [1]

2.3 State what it means for a program to be “maintainable”. [1]

3 Exam-style questions

3.1 Good program design improves a program’s [1]

- | | |
|---|---|
| A | B |
| C | D |
- A** speed only
 - B** reliability and maintainability
 - C** file size
 - D** colour

3.2 Testing with a wide range of inputs helps to [1]

- | | |
|---|---|
| A | B |
| C | D |
- A** slow the program down
 - B** find defects
 - C** add bias
 - D** compress data

3.3 A poorly designed program is hard to change and often breaks.

(a) State one quality it lacks. [1]

(b) State one way to catch its bugs. [1]

(c) State one risk that poor design poses to users. [1]