AP COMPUTER SCIENCE PRINCIPLES • EXERCISE SHEET

3.6 Conditionals

Name: _____ Class: _____ Date: _____ **Total: 8 marks**

KEY WORDS selection 选择 • conditional 条件语句

Objective

Build the skills to answer exam questions on **conditionals**.

You must be able to:

- explain how a **conditional** 条件语句 runs a block only when a condition is true
- use an **if** statement with an **else** clause to choose between two paths
- describe how **selection** 选择 lets a program make decisions
- trace which branch executes for given inputs

1 Worked examples

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

If and if-else

An **if** statement runs its block only when the condition is **true**. Adding an **else** gives the path taken when it is **false**.

Selection

Selection is how a program **makes decisions** based on data. To predict behaviour, trace which branch runs.

Example

`if age >= 18: print "adult" else: print "minor"` prints `"adult"` only when age is at least 18.

2 Practice

2.1 State what a conditional (if) statement does. [1]

2.2 A program runs `if score >= 50: print "pass" else: print "fail"`. State the output when `score` is 40. [1]

2.3 State the term for a program making a decision based on data. [1]

3 Exam-style questions

3.1 An if statement runs its block [1]

- **A** always
- **B** only when the condition is true
- **C** never
- **D** exactly twice

3.2 An else clause runs when the condition is [1]

- **A** true
- **B** false
- **C** zero
- **D** missing

3.3 A program runs `if temp > 30: print "hot" else: print "ok"`.

(a) State the output when `temp` is 35. [1]

(b) State the output when `temp` is 20. [1]

(c) Name the process of choosing between the two branches. [1]

Solutions

2.1 it runs a block of code only when its condition is true.

2.2 `fail`.

2.3 selection.

3.1 **B**.

3.2 **B**.

3.3 (a) `hot`. (b) `ok`. (c) selection.