

2.2 PROGRAMMING TECHNIQUES · 2.2.1(A)

Sequence, selection & iteration — Mark scheme

30 marks · spec 2.2.1(a)

AO key: AO1 = knowledge · AO2 = application · AO3 = programming. Code answers are indicative — award marks for correct logic in any consistent pseudocode/language.

Q	ANSWER	AO	MARKS
1(a)	Sequence (1); selection / branching (1); iteration / looping (1). (3)	AO1	3
1(b)	Count-controlled repeats a known/fixed number of times (1); condition-controlled repeats until a condition changes (count not known in advance) (1). (2)	AO1	2
1(c)	= assigns a value; == tests/compares for equality. (1)	AO1	1

Q	ANSWER	AO	MARKS															
2(a)	<table><tr><th>X</th><th>COUNT</th><th>X > 1 ?</th></tr><tr><td>10</td><td>0</td><td>True</td></tr><tr><td>5</td><td>1</td><td>True</td></tr><tr><td>2</td><td>2</td><td>True</td></tr><tr><td>1</td><td>3</td><td>False</td></tr></table> x values 5, 2, 1 correct (2); count values 1, 2, 3 correct (1); final condition False (loop ends) (1). (4)	X	COUNT	X > 1 ?	10	0	True	5	1	True	2	2	True	1	3	False	AO2	4
X	COUNT	X > 1 ?																
10	0	True																
5	1	True																
2	2	True																
1	3	False																
2(b)	3. (1)	AO2	1															
2(c)	Condition-controlled. (1)	AO1	1															

Q	ANSWER	AO	MARKS
3(a)	mark 55 → B (1); mark 70 → A (1); mark 38 → U (1). (3)	AO2	3
3(b)	The conditions are tested in order (1); the first one that is True runs and the rest (elseif/else) are skipped (1). (2)	AO2	2
3(c)	Selection (branching). (1)	AO1	1

Q	ANSWER	AO	MARKS
4(a)	Indicative solution (award for logic): <pre>total = 0 for i = 1 to 5 num = input("Enter a number: ") total = total + num next i print(total)</pre> Initialise <code>total = 0</code> (1); FOR loop running exactly 5 times (1); input a number inside the loop (1); add it to the running total (1); output the total after the loop (1). (5)	AO3	5
4(b)	The number of repetitions is known in advance (exactly 5). (1)	AO2	1

Q	ANSWER	AO	MARKS
5(a)	Indicative solution (award for logic): <pre>do pw = input("Password: ") until pw == "open123"</pre> do ... until structure (1); input the password inside the loop (1); condition <code>pw == "open123"</code> (1); loop repeats while the password is wrong / ends when correct (1). (4)	AO3	4
5(b)	The number of attempts is not known in advance (depends on the user). (1)	AO2	1
5(c)	WHILE tests before the body (may run 0 times); DO...UNTIL tests after (runs at least once). (1)	AO1	1

Total for paper: 30 marks