Zig Zag Education

Computer Science GCSE (9–1) | OCR | J277

Multiple-Choice Questions

for OCR GCSE Computer Science (J277)

Component 2: Computational Thinking, Algorithms and Programming

Update v1.2, December 2022

zigzageducation.co.uk **POD 11038**

Contents

Teacher's Introduction

This pack of multiple-choice questions has been produced specifically for use with the OCR GCSE Computer Science (J277) specification, for first teaching September 2020; first exams in 2022.

It contains 10 question banks covering the prescribed content for **Component 2: Computational Thinking, Algorithms and Programming**. Each OCR specification topic is covered by two or more question banks, with each question bank covering a variety of concepts within that specification topic. By design, the question banks for a given topic are not mutually exclusive in the concepts that they cover; there is some overlap between them. This means that you do not need to issue all question banks for a given topic at the same time if you do not wish to; for example, you could set question bank [1] for a topic and then revisit question bank [2] to fill in any gaps and reinforce concepts at a later date.

The question banks should prove equally valuable for end-of-topic testing/reinforcement (either in class or as homeworks), or as part of a revision programme in the lead up to the exams. Not all students have easy access to a computer or online resources, so having a readily-available paper-based format can help all students to complete the question banks more easily, as well as provide something that can be used for future reference.

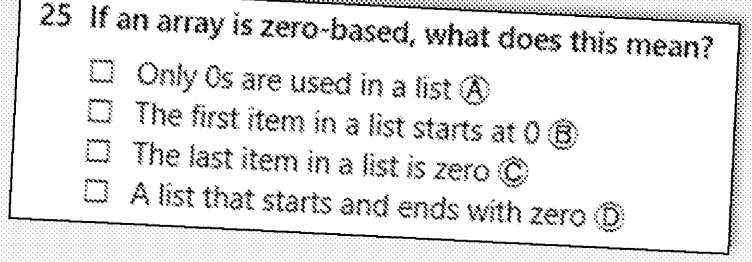
Each question bank consists of approximately 25 questions, each worth a single mark for simplicity. For the majority of questions, there is one correct ans wer, and where this is not the case, the question will explicitly state the number of correct answers needed to gain the mark. To aid student engagement and support different learning styles, there is a mixture of text-only questions and questions that are based on some given data, image or diagram.

The Answers section includes the answers in a concise grid format, to facilitate quick and easy marking, either by the teacher or the students themselves. There is a lso additional commentary for a many of the questions, to support understanding and potentially prompt further discussion.

July 2021

Note about electronic versions (.docx /.pdf)

If you have purchased the electronic upgrade for this resource, you will find that the question banks have been created as forms, enabling students to complete each test on screen by ticking the check boxes.



If you have not upgraded to electronic format(s) but would like to, please contact ZigZag Education customer services (0117 950 3199) who will be happy to assist you.

Version 1.1, April 2022

Corrections and improvements throughout, including corrections to:

Test 2.1[1] – Question 3 diagram
Test 2.1[2] – Questions 15 and 23
Test 2.2[1] – Question 16
Test 2.2[2] – Questions 2, 6, 19, 21
Test 2.3[1] – Question 9
Test 2.3[2] – Questions 3, 5 (plus answer), 7, 12, 16
Test 2.4[1] – Questions 9, 16 and 17 (answer)
Test 2.4[2] – Questions 5, 8 and 9 (answers), 23
Test 2.5[1] – Questions 7, 20
Test 2.5[2] – Questions 3, 4, 24

Version 1.2, December 2022

Test 2.5[1] – Questions 3 & 4: Diagram replaced and question 3 amended (p26); explanations in answers amended to match (p9).

2.1 Algorithms [1]

1 What is abstraction?

- ☐ Showing step-by-step instructio[illegible] a problem Ⓐ
- ☐ Making a process mor[illegible] than it has to be Ⓑ
- ☐ Identifying [illegible] ssential) bits from a problem and leaving out the de[illegible]
- ☐ Typing [illegible] ating programming instructions for an app Ⓓ

2 A satnav map device showing a driver the directions to get to a destination is an example of...

- ☐ Decomposition Ⓐ
- ☐ Abstraction Ⓑ
- ☐ Algorithmic thinking Ⓒ
- ☐ Flow charts Ⓓ

3 How is decomposition used in computational thinking?

- ☐ Used to break down a complex pr[illegible] nt[illegible] mall parts Ⓐ
- ☐ Testing a program is mor[illegible] Ⓑ
- ☐ Used to created b[illegible] rithms Ⓒ
- ☐ Input [illegible] mp[illegible] Ⓓ

4 An algorithm should always show...

- ☐ Any inputs, processing and outputs of a program Ⓐ
- ☐ The background colour of the computer screen Ⓑ
- ☐ Where a program should be saved Ⓒ
- ☐ How much time has been spent developing a program Ⓓ

5 What is algorithmic thinking?

- ☐ The way a problem is solved, and the st[illegible] o solve the problem Ⓐ
- ☐ Thinking about algorithms Ⓑ
- ☐ Using abstraction to [illegible] n to a problem Ⓒ
- ☐ The wa[illegible] ra[illegible] e is put together Ⓓ

Use the table b[illegible]

Program 1	W[illegible]
Program 2	[illegible]
Program 3	S[illegible]

6 What woul[illegible]

- ☐ Length [illegible]
- ☐ Length [illegible]
- ☐ Length [illegible]
- ☐ Length [illegible]

7 What woul[illegible]

- ☐ What is [illegible]
- ☐ What is [illegible]
- ☐ Input d[illegible]
  Input s[illegible]
- ☐ Input n[illegible]
  Input b[illegible]

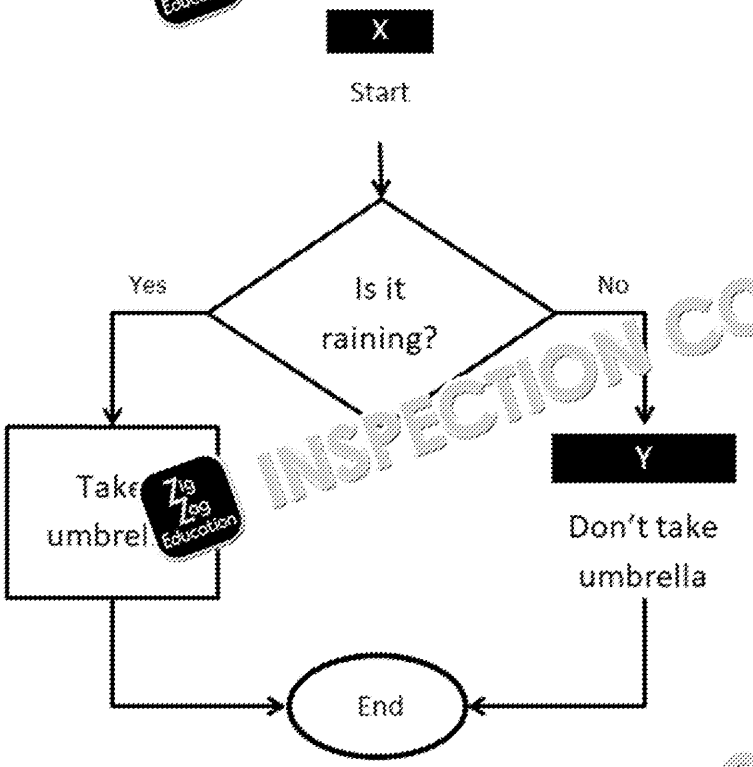
8 What woul[illegible]

- ☐ Start ag[illegible]
- ☐ Automa[illegible]
- ☐ Clothes [illegible]
- ☐ Set off [illegible]

9 **Which definition best describes a flow chart?**

- ☐ Uses text to show the steps involved in a process Ⓐ
- ☐ Uses verbal language to speak instructions to a computer Ⓑ
- ☐ Uses symbols to draw a picture of a program Ⓒ
- ☐ Uses symbols to show the steps in a process Ⓓ

Use the diagram below to answer Q10–Q11.



10 **Identify the missing symbol at position X in the flow chart.**

- ☐ Rectangle Ⓐ
- ☐ Connecting line Ⓑ
- ☐ Oval Ⓒ
- ☐ Diamond Ⓓ

11 **Identify the**

- ☐ Diamon
- ☐ Connec
- ☐ Circle Ⓒ
- ☐ Rectang

12 **Select the**

- ☐ Plain te
- ☐ Pseudo
- ☐ Flow ch
- ☐ Notes i

13 **What is a t**

- ☐ A techn
- ☐ A techn
- ☐ A table
- ☐ A table

14 **What does**

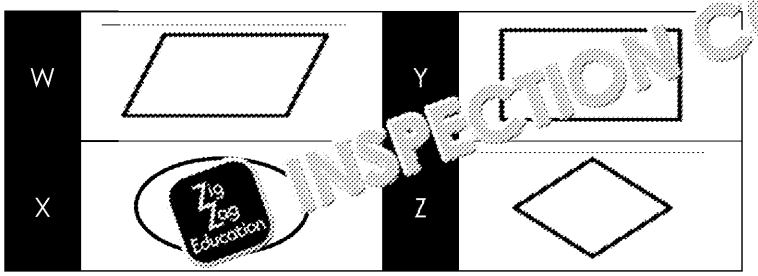
```
print "I
```

- ☐ Prints t
- ☐ Prints t
- ☐ Assigns
- ☐ Stores t

15 **Abstractio**
better repr

- ☐ TRUE Ⓐ
- ☐ FALSE Ⓑ

Use the image below to answer Q16–Q17.



16 What does the flow chart symbol at Y represent?

- ☐ Process Ⓐ
- ☐ Decision Ⓑ
- ☐ Terminator Ⓒ
- ☐ Input/Output Ⓓ

17 What does the flow chart symbol at Z represent?

- ☐ Terminator Ⓐ
- ☐ Decision Ⓑ
- ☐ Process Ⓒ
- ☐ Input/O[illegible] Ⓓ

18 An insertio[illegible] builds the final list two items at a time. True or false?

- ☐ TRUE Ⓐ
- ☐ FALSE Ⓑ

19 What does a binary search do?

- ☐ The list is split into two and then the two lists are compared Ⓐ
- ☐ Each item in a list is checked in order Ⓑ
- ☐ The first and last items in a list are compa[illegible] s[illegible]ped Ⓒ
- ☐ The first two values in a list are c[illegible] th[illegible]moved Ⓓ

20 A linear search is wh[illegible] split into two and then compared. True or fa[illegible]

- ☐ TRUE Ⓐ
- ☐ FALSE Ⓑ

Use the data b[illegible]

12	29

21 How many [illegible] on this list?

- ☐ 2 Ⓐ
- ☐ 3 Ⓑ
- ☐ 4 Ⓒ
- ☐ 5 Ⓓ

22 Why can't [illegible]

- ☐ The nu[illegible]
- ☐ The list [illegible]
- ☐ The list [illegible]
- ☐ The list [illegible]

23 A list to be [illegible] True or fals[illegible]

- ☐ TRUE Ⓐ
- ☐ FALSE Ⓑ

24 Which stat[illegible]

- ☐ Can loc[illegible]
- ☐ It is less[illegible]
- ☐ Looks f[illegible]
- ☐ Is alway[illegible]

25 A linear se[illegible]

- ☐ TRUE Ⓐ
- ☐ FALSE Ⓑ

2.1 Algorithms [2]

1 **What is decomposition?**

- ☐ Creating an algorithm for a problem which needs to be solved Ⓐ
- ☐ Breaking a problem down into smaller parts; each individual part is solved separately Ⓑ
- ☐ Using unavailable names in a program Ⓒ
- ☐ Testing a program in small parts to make sure it runs correctly Ⓓ

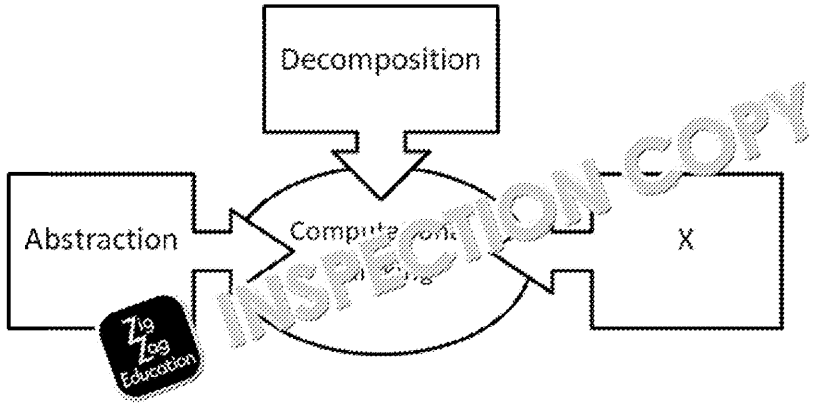
2 **Which of the following can be abstracted from a satnav device without reducing its effectiveness?**

- ☐ Street names Ⓐ
- ☐ Position of the vehicle Ⓑ
- ☐ Directions Ⓒ
- ☐ Trees and shrubs Ⓓ

3 **State one advantage of decomposition.**

- ☐ Programs developed will always run faster Ⓐ
- ☐ The apps developed will be user friendly Ⓑ
- ☐ In some cases, program components developed in one program can be reused in other programs Ⓒ
- ☐ Programs will never have errors Ⓓ

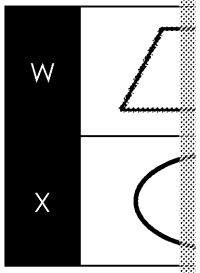
Use the diagram below to answer Q4.



4. **What is the computatic**

- ☐ Debugg
- ☐ Flow ch
- ☐ Algoritl
- ☐ Pseudo

Use the image



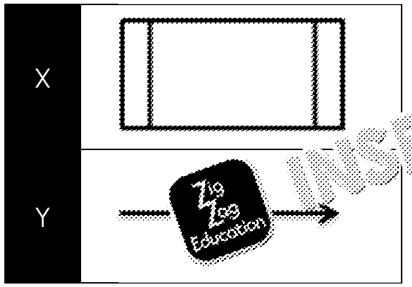
5 **What does**

- ☐ Process
- ☐ Termin
- ☐ Input/C
- ☐ Decisio

6 **What does**

- ☐ Process
- ☐ Decisio
- ☐ Input/C
- ☐ Termin

Use the image below to answer Q7–Q8.



7 What does the flow chart symbol at X represent?

- ☐ Process Ⓐ
- ☐ Decision Ⓑ
- ☐ Subprogram Ⓒ
- ☐ Input/Output Ⓓ

8 What does the flow chart symbol at Y represent?

- ☐ Connecting line Ⓐ
- ☐ Input/Output Ⓑ
- ☐ Decision Ⓒ
- ☐ Seque

9 Which state is not true about pseudocode?

- ☐ No convention or rules Ⓐ
- ☐ Uses symbols Ⓑ
- ☐ Can be your own words Ⓒ
- ☐ Can be based on programming code Ⓓ

10 How does pseudocode differ from a flow chart?

- ☐ A flow chart is a series of text-style instru… whereas a pseudocode uses symbols Ⓐ
- ☐ A flow chart is easy to de… pseudocode is difficult to design Ⓑ
- ☐ Pseudocod… is a … text-style instructions whereas a flow chart uses symbo…
- ☐ Pseudoc… is to use proper sentences but a flow chart can use short sentences Ⓓ

11 What is a f…

- ☐ To show…
- ☐ To show…
- ☐ To ente…
- ☐ To draw…

12 Which answ…

- ☐ Compli…
- ☐ Simple …
- ☐ Taking …
- ☐ Algorith… to solve…

Complete the trace table below, then answer Q13–Q15.

Algorithm
Number = 2 PRINT Num FOR i from 2   Number = Number + 3 END FOR PRINT Number

Trace table			
Step		i	Output
1	X =		
2			2
3		Y =	
4	5		
5			
6			
7			Z =

13 What is the value of the number at position X?

- ☐ 5 Ⓐ
- ☐ 2 Ⓑ
- ☐ 7 Ⓒ
- ☐ 1 Ⓓ

14 What will [illegible] position Y be?

- ☐ 2 Ⓐ
- ☐ 5 Ⓑ
- ☐ 1 Ⓒ
- ☐ 7 Ⓓ

15 What is the output value at the end of the process (Z)?

- ☐ 8 Ⓐ
- ☐ 5 Ⓑ
- ☐ 2 Ⓒ
- ☐ 1 Ⓓ

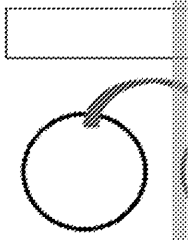
16 Merge sort

- ☐ When a
- ☐ When a
- ☐ When a
- ☐ When a

17 Which of t

- ☐ Comple
- ☐ Swappi
- ☐ Decima
- ☐ Binary s

18 Which type



- ☐ Binary s
- ☐ Randor
- ☐ Linear s
- ☐ Boolea

19 In the first
swaps ther

- ☐ TRUE Ⓐ
- ☐ FALSE Ⓑ

20 Select the

- ☐ Is used
- ☐ Is used
- ☐ Is used
- ☐ Is used

21 **Select the correct statement for a merge sort.**

- ☐ Compares pairs of items in a list Ⓐ
- ☐ Looks for items in an ordered list then sorts [illegible] Ⓑ
- ☐ Is the simplest type of sort Ⓒ
- ☐ Splits a list repeatedly and [illegible] the lists back together Ⓓ

22 **Which sor[illegible]ort[illegible]n is being described: split a list into individual lists, then comb[illegible]e lists, two lists at a time?**

- ☐ Bubble sort Ⓐ
- ☐ Merge sort Ⓑ
- ☐ Insertion sort Ⓒ
- ☐ Split sort Ⓓ

23 **Which statement is true about a merge sort?**

- ☐ It splits apart a list and then merges it back together Ⓐ
- ☐ It is not ideal for large lists Ⓑ
- ☐ It splits apart a list and carries out a merge s[illegible]t[illegible]n [illegible]ot[illegible]halves Ⓒ
- ☐ All of these Ⓓ

24 **Which sorting algorith[illegible]s [illegible]moving through a list, swapping items that are in [illegible]on[illegible]?**

- ☐ Insertic[illegible]
- ☐ Bubble sort Ⓑ
- ☐ Merge sort Ⓒ
- ☐ All sorts Ⓓ

25 **Identify the**

```
for z
    if (
    en
next z
```

- ☐ Comple[illegible]
- ☐ Binary [illegible]
- ☐ Linear [illegible]
- ☐ Randor[illegible]

26 **Which sort**

- ☐ Merge [illegible]
- ☐ Insertic[illegible]
- ☐ Bubble [illegible]
- ☐ Split so[illegible]

2.2 Programming Fundamentals [1]

1 What is the definition of a variable?

- ☐ A value that does not change when a program is running Ⓐ
- ☐ A named value which can be changed as the program is running Ⓑ
- ☐ A string of text that is entered into a program Ⓒ
- ☐ A number that is changed from a decimal to an integer Ⓓ

2 Select the correct definition of a constant.

- ☐ A named value which can be changed as the program is running Ⓐ
- ☐ When data is processed inside a computer Ⓑ
- ☐ A named value which cannot be altered while the program is running Ⓒ
- ☐ Always getting the same answer to a problem Ⓓ

Use the table below to answer questions Q3–Q6.

Arithmetic Operators	
+	W
/	X
MOD	
^	

3 What is the name of the arithmetic operator at W?

- ☐ Modulus Ⓐ
- ☐ Divide Ⓑ
- ☐ Addition Ⓒ
- ☐ Quotient Ⓓ

4 What is the name of the arithmetic operator at X?

- ☐ Divide Ⓐ
- ☐ Quotient Ⓑ
- ☐ Modulus Ⓒ
- ☐ Subtract Ⓓ

5 What is the

- ☐ Quotien
- ☐ Modulu
- ☐ Modera
- ☐ Divide

6 What is the

- ☐ Sum Ⓐ
- ☐ Divide
- ☐ Quotien
- ☐ Expone

7 Which stat

- ☐ A speci functio
- ☐ Someo
- ☐ When a
- ☐ A chara

8 Which of t

- ☐ = Ⓐ
- ☐ > Ⓑ
- ☐ < Ⓒ
- ☐ ! Ⓓ

9 Choose the program.

- ☐ Real Ⓐ
- ☐ String
- ☐ Boolean
- ☐ Charact

Use the table below to answer questions Q10–Q13.

Comparison Operators			
W	!=	Y	<=
X	==	Z	>

10 What is th… of the comparison operator at W?

- ☐ Equal to …
- ☐ Greater than Ⓑ
- ☐ Not equal to Ⓒ
- ☐ Less than or equal to Ⓓ

11 What is the name of the comparison operator at X?

- ☐ Greater than Ⓐ
- ☐ Equal to Ⓑ
- ☐ Less than or equal to Ⓒ
- ☐ Not equal to Ⓓ

12 What is the name of the … perator at Y?

- ☐ Greate… Ⓐ
- ☐ Equal …
- ☐ Less tha…
- ☐ Less than or equal to Ⓓ

13 What is the name of the comparison operator at Z?

- ☐ Greater than Ⓐ
- ☐ Less than Ⓑ
- ☐ Not equal to Ⓒ
- ☐ Equal to Ⓓ

14 Select the operator being used … e fo… …ng comparison: `x <= z`

- ☐ Greater than or e…
- ☐ Greate… Ⓑ
- ☐ Less th… ual to Ⓒ
- ☐ Equal to …

15 Identify the…

- ☐ String …
- ☐ Real Ⓑ
- ☐ Integer …
- ☐ Charact…

16 'Computer …

- ☐ Charact…
- ☐ String …
- ☐ Real Ⓒ
- ☐ Integer …

17 Identify the…

- ☐ Integer …
- ☐ Real Ⓑ
- ☐ Integer …
- ☐ Charact…

Use the table b…

Data
True
26.5
A

18 What is the…

- ☐ Boolean …
- ☐ Real Ⓑ
- ☐ Integer …
- ☐ Charact…

19 What is the…

- ☐ Integer …
- ☐ Boolean …
- ☐ Charact…
- ☐ Real Ⓓ

20 What is the data type represented at Z?

- ☐ Boolean Ⓐ
- ☐ Integer Ⓑ
- ☐ Character Ⓒ
- ☐ Real Ⓓ

21 What is S[illegible] Query Language)?

- ☐ An app[illegible] search for data Ⓐ
- ☐ A programming language used to manage and search databases Ⓑ
- ☐ A search command used to find data Ⓒ
- ☐ A variable name used by a programmer Ⓓ

22 What is the definition of a function?

- ☐ A name given to a variable in a program Ⓐ
- ☐ The output from a calculation Ⓑ
- ☐ A subprogram that takes parameters and returns a [illegible] Ⓒ
- ☐ A subprogram that does not return a value Ⓓ

23 Which of the following is an ex[illegible]e of a constant?

- ☐ Pi=3.14159 Ⓐ
- ☐ Your a[illegible]
- ☐ What t[illegible] Ⓒ
- ☐ The amount of daylight each day Ⓓ

24 Which stat[illegible]

- ☐ A subp[illegible]
- ☐ A data [illegible] variable
- ☐ A name[illegible]
- ☐ A collec[illegible]

25 If an array [illegible]

- ☐ Only 0s[illegible]
- ☐ The firs[illegible]
- ☐ The last[illegible]
- ☐ A list th[illegible]

26 Which stat[illegible]

- ☐ The arr[illegible]
- ☐ Informa[illegible]
- ☐ The arr[illegible]
- ☐ Informa[illegible]

2.2 Programming Fundamentals [21]

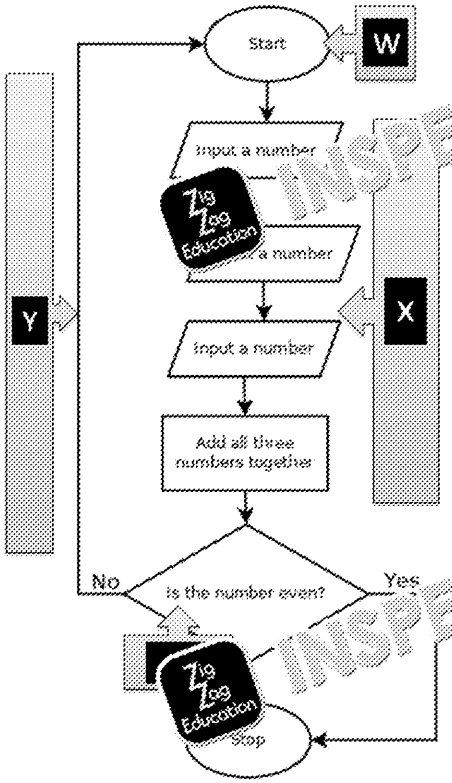
1 Select the correct definition of casting.

- ☐ Multiplying two real numbers to [illegible]
- ☐ Using a logical operator [illegible] a result Ⓑ
- ☐ Changing a data [illegible] one type to another Ⓒ
- ☐ Using [illegible] output a result Ⓓ

2 Which of th[illegible] below indicates input into a system?

- ☐ Watching TV Ⓐ
- ☐ Pressing buttons on a game controller Ⓑ
- ☐ Listening to music on a smartphone Ⓒ
- ☐ A calculator working out the result of multiplying numbers together Ⓓ

Use the flow chart below to answer Q3–Q5.



3 Identify th[illegible]

- ☐ Z Ⓐ
- ☐ X Ⓑ
- ☐ Y Ⓒ
- ☐ W Ⓓ

4 The area th[illegible]

- ☐ Z Ⓐ
- ☐ Y Ⓑ
- ☐ W Ⓒ
- ☐ X Ⓓ

5 Select the [illegible]

- ☐ Y Ⓐ
- ☐ X Ⓑ
- ☐ W Ⓒ
- ☐ Z Ⓓ

6 How can in[illegible]

- ☐ Data th[illegible]
- ☐ Data th[illegible] proble[illegible]
- ☐ Data th[illegible]
- ☐ Text an[illegible]

7 Select the f[illegible]

- ☐ TEXT Ⓐ
- ☐ STRING[illegible]
- ☐ VAR Ⓒ
- ☐ LEN Ⓓ

8 How can o[illegible]

- ☐ Data th[illegible]
- ☐ Data th[illegible]
- ☐ Informa[illegible]
- ☐ When a[illegible]

9 **Alice has been learning to program, but never uses procedures in her code. State a reason why it would be beneficial to do this.**

- ☐ She can take longer breaks Ⓐ
- ☐ Makes the program easier to debug Ⓑ
- ☐ The computer will always run code faster Ⓒ
- ☐ The same code can run on any computer Ⓓ

10 **What is meant by the term iteration?**

- ☐ Needed when a decision has to be made Ⓐ
- ☐ When a series of instructions need to be repeated until a specific answer is achieved Ⓑ
- ☐ When a set of instructions follow on from each other until a result is achieved Ⓒ
- ☐ An instruction that stops a program from running Ⓓ

11 **What is the programming construct called when program instructions follow one after another?**

- ☐ Iteration Ⓐ
- ☐ Sequence Ⓑ
- ☐ Looping Ⓒ
- ☐ Selection Ⓓ

12 **What is iteration when used in a program?**

- ☐ When code is stopped Ⓐ
- ☐ When a program makes a decision Ⓑ
- ☐ When code is repeated Ⓒ
- ☐ When a variable changes its value Ⓓ

13 **When should the logical operator AND be used?**

- ☐ When both data items need to be true for action to be taken Ⓐ
- ☐ When both items need to be false for action to be taken Ⓑ
- ☐ When only one item needs to be true for action to be taken Ⓒ
- ☐ When both inputs need to be 0 or 1 Ⓓ

14 **Select the s**

- ☐ When b
- ☐ When c
- ☐ When b
- ☐ When b

15 **When wou conjunctio**

- ☐ When c
- ☐ When b
- ☐ When b
- ☐ When b

16 **What is me**

- ☐ Typing
- ☐ Passing
- ☐ The kin
- ☐ The typ

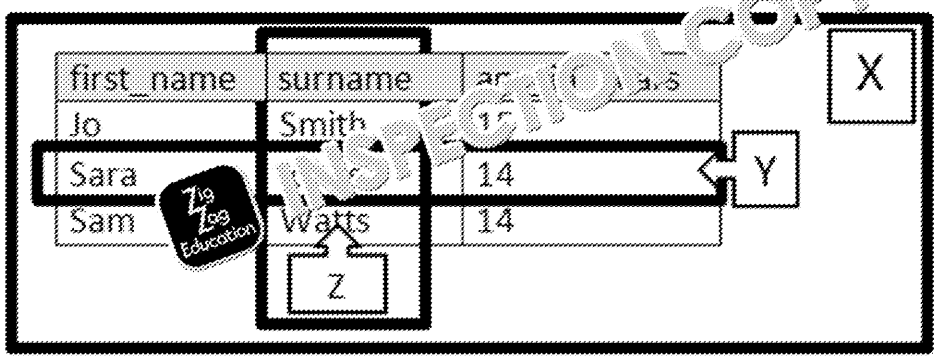
17 **Identify the**

- ☐ A string
- ☐ Real Ⓑ
- ☐ Charact
- ☐ Integer

18 **Identify the**

- ☐ Boolean
- ☐ Integer
- ☐ Binary Ⓒ
- ☐ Charact

Use the diagram below to answer Q19–Q21.



19 Identify the database feature outlined in Y.

- ☐ Table Ⓐ
- ☐ Variable Ⓑ
- ☐ Record Ⓒ
- ☐ Field Ⓓ

20 What is the database feature called?

- ☐ Table Ⓐ
- ☐ Record Ⓑ
- ☐ Field Ⓒ
- ☐ Structure Ⓓ

21 The database feature at Z is called a...

- ☐ Field Ⓐ
- ☐ Structure Ⓑ
- ☐ Table Ⓒ
- ☐ Variable Ⓓ

22 Select the c

- ☐ A piece
- ☐ A place
- ☐ A collec
- ☐ A collec

23 In SQL, wh

- ☐ A wildc
- ☐ Multipl
- ☐ Add all
- ☐ A list Ⓓ

24 Which of t

- ☐ Read Ⓐ
- ☐ Open Ⓑ
- ☐ Store Ⓒ
- ☐ Write Ⓓ

25 Which one

- ☐ FROM
- ☐ WHERE
- ☐ SELECT
- ☐ HOME

2.3 Producing Robust Programs [1]

1 What is meant by defensive design?

- ☐ Designing games programs Ⓐ
- ☐ Stopping viruses getti[illegible] mputer Ⓑ
- ☐ Trying t[illegible]e p[illegible] error-free and planning for this Ⓒ
- ☐ Makin[illegible]ur operating system is always up to date Ⓓ

2 Why is it important to give variables sensible names?

- ☐ So that the programming code understands it Ⓐ
- ☐ Because they are part of functions Ⓑ
- ☐ To meet the requirements of the original design Ⓒ
- ☐ So that it is easy to understand what they are storing Ⓓ

Use the programming code extract below to answer Q3–Q5.

```
#This is a maths quiz program

highscore = 0
while True:
    sco[illegible]
    prin[illegible]ome to the Maths Quiz")
    prin[illegible]n you answer three questi
    print("Question 1: What is the pro
    answer = int(input("Your answer :>>
    if answer == 8:
        print("Correct")
```

Y

Z

3 What maintainability feature is shown at X?

- ☐ Comments Ⓐ
- ☐ Meaningful variable name Ⓑ
- ☐ Indentation Ⓒ
- ☐ White [illegible] Ⓓ

4 Identify the

- ☐ Comme
- ☐ White s
- ☐ Indenta
- ☐ Meanin

5 What is the

- ☐ Meanin
- ☐ Indenta
- ☐ Comme
- ☐ White s

6 Why is put

- ☐ They ar
- ☐ They gi
- ☐ So that achieve
- ☐ So that

7 What is da

- ☐ Checkin
- ☐ Checkin
- ☐ Testing
- ☐ Explain

8 A program What could

- ☐ Test the
- ☐ Check t
- ☐ Check t
- ☐ Make s

9 Select the correct definition of input sanitisation.

- ☐ Making programs which are easy to read, structured and commented Ⓐ
- ☐ Checking for logical errors Ⓑ
- ☐ Making sure the data is safe before it is used in a program Ⓒ
- ☐ Checking for syntax errors Ⓓ

10 Which of the following would be the most suitable name for a variable?

- ☐ `AgeIn` Ⓐ
- ☐ `age_in_years` Ⓑ
- ☐ `years` Ⓒ
- ☐ `aiy` Ⓓ

11 What is a range check?

- ☐ Checks for presence of data Ⓐ
- ☐ Checks to see whether data is a character or a number Ⓑ
- ☐ Checks to see whether data is text or numbers Ⓒ
- ☐ Checks that the data is within an acceptable range Ⓓ

12 The image shows a reCAPTCHA verification screen.
What is the purpose of reCAPTCHA verification?

- ☐ To make sure a password is correct Ⓐ
- ☐ To capture a username Ⓑ
- ☐ To make sure antivirus software is up to date Ⓒ
- ☐ To make sure the user is a human and not a bot Ⓓ

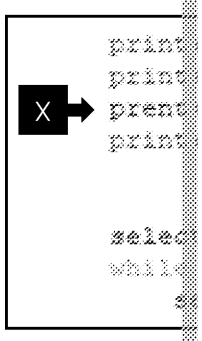
13 What is data authentication?

- ☐ Checking that a user's input data are correct Ⓐ
- ☐ Checking syntax errors Ⓑ
- ☐ Entering user data into a logon screen Ⓒ
- ☐ Making sure no errors/bugs are in the program Ⓓ

14 What is 'ex

- ☐ Output
- ☐ Data th
  accepta
- ☐ Data de
- ☐ Data in

Use the progra



15 What type

- ☐ Syntax
- ☐ Logic e
- ☐ Boolear
- ☐ Develo

16 The type o

- ☐ Syntax
- ☐ Logic e
- ☐ No erro
- ☐ Develo

17 A _____

- ☐ Boolear
- ☐ Logic e
- ☐ Indenta
- ☐ Syntax

18 **Select the correct definition of boundary test data.**

- ☐ A test to check whether data is present or not Ⓐ
- ☐ Data that is converted from one data type to another Ⓑ
- ☐ Data at the upper or lower limits of what should be accepted Ⓒ
- ☐ Comments at the beginning and end of a program Ⓓ

19 **What type of errors result through code being mistyped?**

- ☐ Runtime errors Ⓐ
- ☐ Logic errors Ⓑ
- ☐ Syntax errors Ⓒ
- ☐ Overflow errors Ⓓ

20 **Where can test data and the results be stored?**

- ☐ In a plan Ⓐ
- ☐ In program comments Ⓑ
- ☐ In RAM Ⓒ
- ☐ In a test table Ⓓ

21 **What is 'erroneous data'?**

- ☐ Numerical data Ⓐ
- ☐ Misspelt Ⓑ
- ☐ Data that is invalid and should be rejected by the program Ⓒ
- ☐ The use of an incorrect operator Ⓓ

22 **What is a syntax error?**

- ☐ An error in the code where the rules or grammar of the programming language have been broken Ⓐ
- ☐ An incorrect spelling in a text string Ⓑ
- ☐ A calculation that gives an incorrect answer Ⓒ
- ☐ Output that is confusing to read Ⓓ

23 **If a program**
characters

- ☐ .com Ⓐ
- ☐ @ Ⓑ
- ☐ .co.uk Ⓒ
- ☐ at Ⓓ

24 **What is me**

- ☐ Done w
- ☐ Done w
- ☐ Testing
- ☐ Testing

25 **Which one**

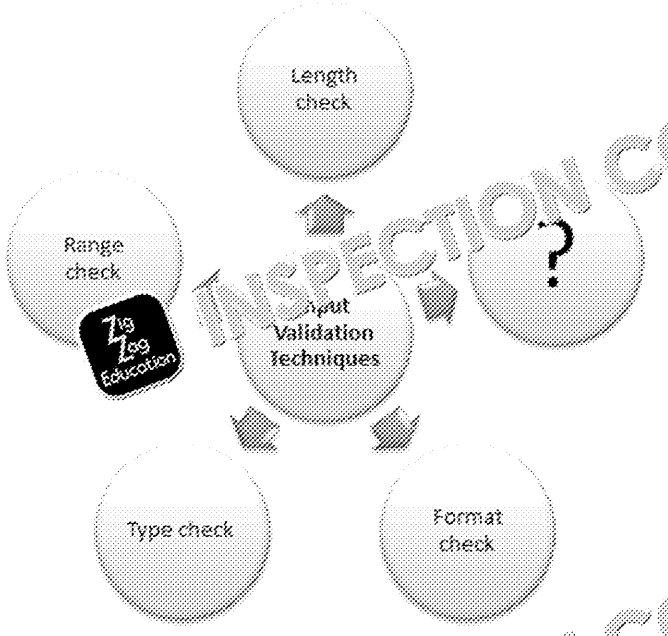
- ☐ print("H
- ☐ print("H
- ☐ print("H
- ☐ print("H

2.3 Producing Robust Programs [2]

1 **Select the correct definition of defensive de**

- ☐ Making programs easy to read, structured and commented Ⓐ
- ☐ Carried out during de… m… make sure the program is free from errors Ⓑ
- ☐ Testin… e sure the program works as it should Ⓒ
- ☐ Trying … programs error-free and planning for this Ⓓ

2 **The diagram shows a selection of input validation techniques. Which other technique could be added to the checks?**



- ☐ Location check Ⓐ
- ☐ Text check Ⓑ
- ☐ Preser… k Ⓒ
- ☐ Outpu… Ⓓ

3 **When does**

- ☐ When t…
- ☐ When a…
- ☐ When t…
- ☐ When t…

4 **What is me**

- ☐ Data th…
- ☐ Data pr…
- ☐ Using p…
- ☐ Data in…

5 **A program … sensible le…**

- ☐ 12 Ⓐ
- ☐ 15 Ⓑ
- ☐ 20 Ⓒ
- ☐ 100 Ⓓ

6 **Using inpu… program…**

- ☐ More fu…
- ☐ More ro…
- ☐ Easier t…
- ☐ More se…

7 **Why is mai…**

- ☐ Makes …
- ☐ Makes …
- ☐ Makes …
- ☐ Reduce…

8 **What role …**

- ☐ It is use…
- ☐ It cuts d…
- ☐ It clearl…
- ☐ It locate…

9 Why are comments usually used within a program?

- ☐ To help describe and explain what the code is expe[illegible] Ⓐ
- ☐ To show where selection occurs in the cod[illegible]
- ☐ To indicate the start and end of a [illegible]
- ☐ To help find bugs and err[illegible] Ⓓ

10 A prograr[illegible] user to enter their surname. What would be a sensible n[illegible] the variable that stored it?

- ☐ name Ⓐ
- ☐ surname Ⓑ
- ☐ full_name Ⓒ
- ☐ first_name Ⓓ

11 How could a software company use final testing to develop an app product?

- ☐ By testing the product against the initial requirements Ⓐ
- ☐ By making sure each data type is correct as the prog[illegible] is developed Ⓑ
- ☐ By checking for syntax errors once the progr[illegible] finished Ⓒ
- ☐ By inserting comments into the pro[illegible] at the end of its development Ⓓ

12 A program is expecting [illegible] input value from 0 to 10. Which data would be boundary

- ☐ 9 Ⓐ
- ☐ 10 Ⓑ
- ☐ 11 Ⓒ
- ☐ 15 Ⓓ

13 Which one is not a purpose of testing a program?

- ☐ To make sure no errors/bugs are in the program Ⓐ
- ☐ To make sure the program works as expected Ⓑ
- ☐ To make sure the program meets the requ[illegible] or what it needs to do Ⓒ
- ☐ To make sure the developer get[illegible] Ⓓ

14 When wou[illegible]

- ☐ At the e[illegible]
- ☐ At the l[illegible]
- ☐ When y[illegible] progra[illegible]
- ☐ While t[illegible]

15 Where doe[illegible]

- ☐ Someo[illegible]
- ☐ It's sho[illegible]
- ☐ Spies u[illegible] called b[illegible]
- ☐ Grace H[illegible] from w[illegible]

16 Which data[illegible] age in year[illegible]

- ☐ 25 Ⓐ
- ☐ Twenty[illegible]
- ☐ 155 Ⓒ
- ☐ 0.25 Ⓓ

17 Testing a p[illegible]

- ☐ Final te[illegible]
- ☐ Bug tes[illegible]
- ☐ Iterative[illegible]
- ☐ Syntax [illegible]

18 Why is a te[illegible]

- ☐ It will e[illegible]
- ☐ To mak[illegible]
- ☐ To help[illegible]
- ☐ To expl[illegible]

The test plan below shows the input of a PIN number on an app. PIN numbers can be integers only from 0–9. A pin number of four digits is needed.

Use the test plan to answer Q19–Q21.

Type of Data	Test Data	Expected Outcome
Boundary	X	Value accepted
Normal	6	Y
Z	A	Value rejected / error

19 What boundary test data should be allowed at X?

- ☐ 4 Ⓐ
- ☐ 7 Ⓑ
- ☐ 4.5 Ⓒ
- ☐ 9 Ⓓ

20 What should the expected outcome at Y be?

- ☐ Value accepted Ⓐ
- ☐ It's OK Ⓑ
- ☐ Digit rejected / error Ⓒ
- ☐ Program crashes Ⓓ

21 What type of data should be tested at position Z?

- ☐ Normal Ⓐ
- ☐ Boundary Ⓑ
- ☐ Erroneous Ⓒ
- ☐ Extreme Ⓓ

22 A program runs but gives incorrect output. What type of error is this?

- ☐ Runtime error Ⓐ
- ☐ Logical error Ⓑ
- ☐ User error Ⓒ
- ☐ Syntax error Ⓓ

23 Select the c

- ☐ Tests th
- ☐ Testing
- ☐ Tests th
- ☐ Tests d

24 Which one
programm

- ☐ Use of
- ☐ Using c
- ☐ Making
- ☐ Using i

25 What is 'nc

- ☐ Values
- ☐ Inputs t
- ☐ Inputs t
- ☐ Data th

2.4 Boolean Logic [1]

1 What is the output of a NOT gate if the inp

- ☐ 0 Ⓐ
- ☐ 1 Ⓑ
- ☐ ON Ⓒ
- ☐ TRUE

2 A NOT gate has...

- ☐ One input and no outputs Ⓐ
- ☐ One input and one output Ⓑ
- ☐ One input and two outputs Ⓒ
- ☐ Two inputs and one output Ⓓ

3 An OR gate has...

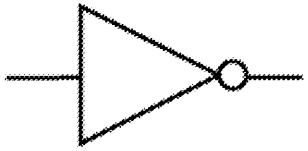
- ☐ One input and one output Ⓐ
- ☐ One input and two outputs Ⓑ
- ☐ Two inputs and two outputs Ⓒ
- ☐ Two inputs and one outp

4 The inputs

y logic gate can have either of two...

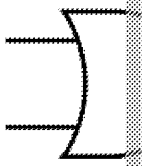
- ☐ States Ⓐ
- ☐ Gates Ⓑ
- ☐ Transistors Ⓒ
- ☐ Formulas Ⓓ

5 Identify the logic gate symbol shown below.



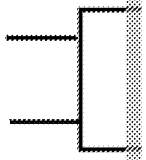
- ☐ OR Ⓐ
- ☐ AND
- ☐ NOT Ⓒ
- ☐ NAND Ⓓ

6 Identify th



- ☐ XOR Ⓐ
- ☐ OR Ⓑ
- ☐ AND Ⓒ
- ☐ NOT Ⓓ

7 Identify th



- ☐ NOT Ⓐ
- ☐ OR Ⓑ
- ☐ NAND
- ☐ AND Ⓓ

8 What is the
CPU, consi

- ☐ Resisto
- ☐ Transist
- ☐ Thermi
- ☐ Sensor

9 Which of t

- ☐ A ∧ B Ⓐ
- ☐ A ∨ B Ⓑ
- ☐ ¬ A Ⓒ
- ☐ A ∧∧ B

10 Which of the expressions is equal to NOT A?

- ☐ A ∧ A Ⓐ
- ☐ A ∨ A Ⓑ
- ☐ ¬ A Ⓒ
- ☐ A ∨ A Ⓓ

11 What is th… …t … …n OR gate if the inputs are 1 and 0?

- ☐ 0 Ⓐ
- ☐ FALSE Ⓑ
- ☐ OFF Ⓒ
- ☐ 1 Ⓓ

12 What is the output of an AND gate if the inputs are 1 and 0?

- ☐ ON Ⓐ
- ☐ FALS£ Ⓑ
- ☐ 0 Ⓒ
- ☐ 1 Ⓓ

13 The use of an AND gate is kno… …

- ☐ Negation Ⓐ
- ☐ Disjun…
- ☐ Conjun…
- ☐ Dysfunction Ⓓ

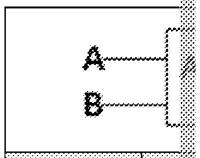
14 The use of an OR gate is known as…

- ☐ Conjunction Ⓐ
- ☐ Negation Ⓑ
- ☐ Dysfunction Ⓒ
- ☐ Disjunction Ⓓ

15 The use of a NOT gate is known as

- ☐ Conjunction Ⓐ
- ☐ Dysfun… Ⓑ
- ☐ Negat…
- ☐ Disjunc… Ⓓ

Use the follow…



Input A	In…
X	
1	
0	
0	

16 What value…

- ☐ 0 Ⓐ
- ☐ 1 Ⓑ
- ☐ ON Ⓒ
- ☐ OFF Ⓓ

17 What shou…

- ☐ 0 Ⓐ
- ☐ 1 Ⓑ
- ☐ 2 Ⓒ
- ☐ 01 Ⓓ

18 What is the…

- ☐ 1 Ⓐ
- ☐ 0 Ⓑ

19 Which of th…

- ☐ A ∧ B …
- ☐ A¬ B Ⓑ
- ☐ A ∨ B …
- ☐ A ∨ B Ⓓ

20 **The binary digits 1 and 0 can also be represented with...**

- ☐ Ying and Yang Ⓐ
- ☐ 2 and 3 Ⓑ
- ☐ TRUE and FALSE Ⓒ
- ☐ UP and DOWN Ⓓ

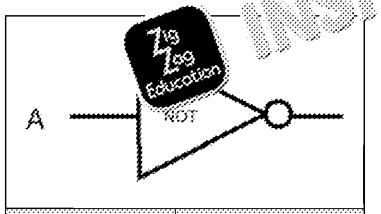
21 **Binary dig[illegible] 0 [illegible]esent what inside of a computer?**

- ☐ Actual [illegible]s moving around inside a computer Ⓐ
- ☐ Small amounts of electrical current that are either there or not there Ⓑ
- ☐ Electrical wires Ⓒ
- ☐ The speed of the CPU Ⓓ

22 **What are truth tables used for?**

- ☐ To calculate how many milliseconds it takes to complete an instruction Ⓐ
- ☐ To find out whether someone is telling the truth Ⓑ
- ☐ To store the results of binary additions Ⓒ
- ☐ To show the input and output of logic gates Ⓓ

Use the following truth table to an[illegible] Q23 & Q24.



A	NOT A
1	X
0	Y

23 **What state**

- ☐ 0 Ⓐ
- ☐ 1 Ⓑ
- ☐ 00 Ⓒ
- ☐ 01 Ⓓ

24 **What state**

- ☐ 00 Ⓐ
- ☐ 11 Ⓑ
- ☐ 1 Ⓒ
- ☐ 0 Ⓓ

25 **What is the**

- ☐ 0 Ⓐ
- ☐ TRUE Ⓔ
- ☐ 1 Ⓒ
- ☐ 1 Ⓓ

2.4 Boolean Logic [2]

1 How many inputs are there in a truth table?

- ☐ 1 Ⓐ
- ☐ 2 Ⓑ
- ☐ 1 or 2 Ⓒ
- ☐ 2 to the power of n, where n is the number of inputs Ⓓ

2 What is the name of the component that allows us to use electrical pulses in a computer?

- ☐ CPU Ⓐ
- ☐ System clock Ⓑ
- ☐ RAM Ⓒ
- ☐ Cache memory Ⓓ

3 Which of the following is not a representation of binary digit 1 and 0?

- ☐ TRUE and FALSE Ⓐ
- ☐ ON and OFF Ⓑ
- ☐ Sweet and Sour Ⓒ
- ☐ Voltage and No voltage Ⓓ

4 What two [illegible] logic gates use?

- ☐ 1 and 2 Ⓐ
- ☐ 0 and 2 Ⓑ
- ☐ 0 and 1 Ⓒ
- ☐ 2 and 1 Ⓓ

5 Why is data in a computer system represented in binary fo[illegible]

- ☐ Because they are simple numbers for a comput[illegible] to add up Ⓐ
- ☐ Because binary is easy for humans to [illegible] w[illegible] Ⓑ
- ☐ Because computers operate in binary at the circuit board level Ⓒ
- ☐ Because computer a[illegible] y language is in binary Ⓓ

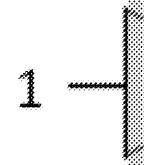
6 If a circuit [illegible] needed?

- ☐ An AND
- ☐ A NOT
- ☐ An OR
- ☐ A Nand

7 What does

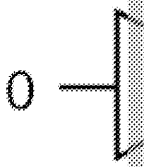
- ☐ A NOT
- ☐ A OR B
- ☐ A ADD
- ☐ A AND

8 In the diag



- ☐ 0 Ⓐ
- ☐ 1 Ⓑ

9 In the diag



- ☐ 0 Ⓐ
- ☐ 1 Ⓑ

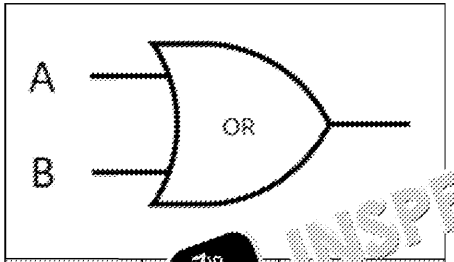
10 What is the output of an OR gate if the inputs are 1 and 1?

- ☐ 1 and 1 Ⓐ
- ☐ 1 and 0 Ⓑ
- ☐ 1 Ⓒ
- ☐ 0 Ⓓ

11 XOR is sh

- ☐ Exactly
- ☐ Not OR Ⓑ
- ☐ Extra OR Ⓒ
- ☐ Exclusive OR Ⓓ

Use the following truth table to answer Q12–Q14.



A		A OR B
0		0
0	X	1
1	0	Y
Z	1	1

12 What would be the state at X?

- ☐ 0 Ⓐ
- ☐ 1 Ⓑ
- ☐ ON Ⓒ
- ☐ OFF Ⓓ

13 What woul

- ☐ ON Ⓐ
- ☐ OFF Ⓑ
- ☐ 0 Ⓒ
- ☐ 1 Ⓓ

14 What woul

- ☐ OFF Ⓐ
- ☐ 1 Ⓑ
- ☐ FALSE Ⓒ
- ☐ ON Ⓓ

15 What is the

- ☐ 0 Ⓐ
- ☐ 1 and 0
- ☐ 1 and 1
- ☐ 1 Ⓓ

16 A OR gate

- ☐ One inp
- ☐ Two inp
- ☐ One inp
- ☐ Two inp

17 The output would give

- ☐ NOT ga
- ☐ AND ga
- ☐ OR gate
- ☐ AND or

18 What does the following symbol used in Boolean expressions represent?

- ☐ OR Ⓐ
- ☐ NOT Ⓑ
- ☐ AND Ⓒ
- ☐ XOR Ⓓ

19 What does the following symbol used in Boolean expressions represent?

- ☐ AND Ⓐ
- ☐ XOR Ⓑ
- ☐ OR Ⓒ
- ☐ NOT Ⓓ

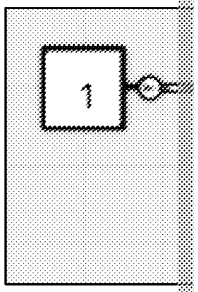
20 What does the following symbol used in Boolean expressions represent?

- ☐ OR Ⓐ
- ☐ AND Ⓑ
- ☐ XOR Ⓒ
- ☐ NOT Ⓓ

21 Which gate would be required if an output was needed when both inputs were 1?

- ☐ AND Ⓐ
- ☐ XOR Ⓑ
- ☐ NOT Ⓒ
- ☐ OR Ⓓ

Use the diagra



22 The diagra
state at po

- ☐ 1 Ⓐ
- ☐ 11 Ⓑ
- ☐ 0 Ⓒ
- ☐ ON Ⓓ

23 What will b

- ☐ ON Ⓐ
- ☐ OFF Ⓑ
- ☐ 1 Ⓒ
- ☐ 0 Ⓓ

24 The output

- ☐ AND Ⓐ
- ☐ OR Ⓑ
- ☐ NOT Ⓒ
- ☐ XOR Ⓓ

25 What two g

- ☐ AND ar
- ☐ AND ar
- ☐ AND ar
- ☐ AND ar

2.5 Programming Languages and IDE [1]

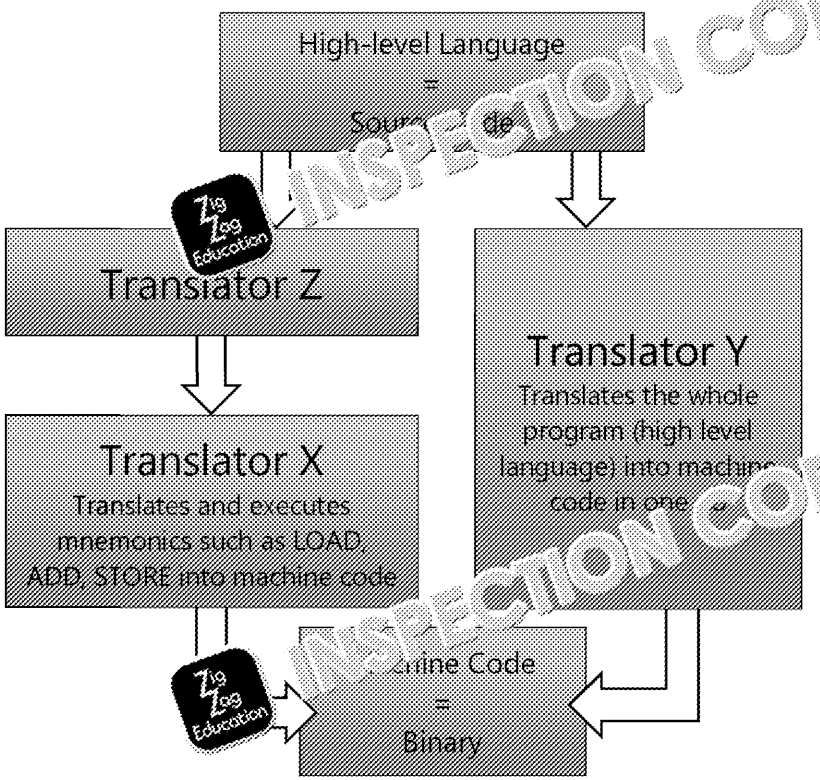
1 Assembly languages are mainly used nowad...

- ☐ Operating systems Ⓐ
- ☐ Word processors Ⓑ
- ☐ Embedd... syste...
- ☐ Netwo... ms Ⓓ

2 What is object code?

- ☐ Code produced by a compiler from the source code Ⓐ
- ☐ Code that gives objects variable names Ⓑ
- ☐ Code that draws graphics in a program Ⓒ
- ☐ Objects such as functions that are used in a program Ⓓ

Use the diagram below to answer Q3–Q4.



3 Identify the...

- ☐ Assemb...
- ☐ Compil...
- ☐ Interpre...

4 What type ...

- ☐ Assemb...
- ☐ Compil...
- ☐ Interpre...

5 Select one ...

- ☐ Less me...
- ☐ Uses En...
- ☐ Easier t...
- ☐ It has lo...

6 Select the ...

- ☐ It is diff...
- ☐ Code c...
- ☐ It is ver...
- ☐ Instruct...

7 Which of th...

- ☐ Pseudo...
- ☐ Python ...
- ☐ Scriptin...
- ☐ Machin...

8 Select one ...

- ☐ Very m...
- ☐ The coc...
- ☐ The coc...
- ☐ Easy fo...

9 An example of a low-level language is...

- ☐ Python Ⓐ
- ☐ Java Ⓑ
- ☐ HTML Ⓒ
- ☐ Assembly language Ⓓ

10 Select an ge) p.ogramming in a high-level programming language:

- ☐ Programs will have smaller file sizes Ⓐ
- ☐ Easier to understand Ⓑ
- ☐ No translator is required Ⓒ
- ☐ Programs will run much faster Ⓓ

11 What is the term given to the binary language the CPU understands?

- ☐ Assembly language Ⓐ
- ☐ Source code Ⓑ
- ☐ Machine code Ⓒ
- ☐ Encrypted code Ⓓ

Use the table below to ans[illegible].

X	cx, exc al, al not ecx cld repne scasb not ecx dec ecx
Y	101100 010110 100101

Z	list = [3,1,2,5,3]
	search = int(input("E[illegible]f s[illegible]ch numer: "))
	for i in range([illegible]):
	if [illegible][i]:
	[illegible]str(search) + " found at position "

12 Which cod

- ☐ X Ⓐ
- ☐ Y Ⓑ
- ☐ Z Ⓒ

13 Which cod

- ☐ X Ⓐ
- ☐ Y Ⓑ
- ☐ Z Ⓒ

14 Which cod

- ☐ X Ⓐ
- ☐ Y Ⓑ
- ☐ Z Ⓒ

15 Which gen

- ☐ 1st Ger
- ☐ 2nd Ge
- ☐ 3rd Ger
- ☐ 4th Ger

16 Which tran

- ☐ Assemb
- ☐ Interpre
- ☐ Compil
- ☐ Editor

17 What type code?

- ☐ Coder
- ☐ Assemb
- ☐ Interpre
- ☐ Compil

18 **In an IDE, what is the editor?**

- ☐ The part of the IDE that allows you to create your p[illegible]
- ☐ A part of a computer program that detects s[illegible]ng [illegible]takes Ⓑ
- ☐ The part of the IDE that runs the [illegible] Ⓒ
- ☐ A section of the program [illegible]at [illegible]ows the outcome of a running program Ⓓ

19 **Why is usi[illegible]ments in a program useful?**

- ☐ For writing a test plan Ⓐ
- ☐ To document unnecessary changes Ⓑ
- ☐ For explaining the code Ⓒ
- ☐ They help translate the code to machine code Ⓓ

20 **It's easier to write good code using an IDE as compared to using a simple text editor. True or false?**

- ☐ TRUE Ⓐ
- ☐ FALSE Ⓑ

21 **What is the definition of an ass[illegible]ler?**

- ☐ Turns source cod[illegible]ect code Ⓐ
- ☐ Comp[illegible]ce [illegible]de into machine code Ⓑ
- ☐ A tool [illegible]s binary code into source code Ⓒ
- ☐ Turns assembly language into machine code Ⓓ

22 **Which statement below best defines an interpreter?**

- ☐ Translates and runs the source code one line at a time Ⓐ
- ☐ Translates and converts source code all in one go [illegible]
- ☐ A translator that creates object code Ⓒ
- ☐ Part of an IDE that allows code t[illegible] Ⓓ

23 **Define run**

- ☐ Part of
- ☐ A sectio decisio
- ☐ Booting
- ☐ Part of

24 **Which of th**

- ☐ Syntax
- ☐ Editor
- ☐ Debugg
- ☐ Spell ch

25 **Which type**

- ☐ The IDE
- ☐ Interpre
- ☐ Compil
- ☐ Assemb

2.5 Programming Languages and IDE[2]

1 Select one advantage of a high-level langua

- ☐ It is very efficient at running co
- ☐ The CPU in a compute directly without being translated Ⓑ
- ☐ It is ver to code Ⓒ
- ☐ Code write, modify and understand for humans. Ⓓ

2 What is the following code an example of?

```
10010101001000100010100101
```

- ☐ Assembly language Ⓐ
- ☐ High-level language Ⓑ
- ☐ Machine code Ⓒ
- ☐ Secret code Ⓓ

3 Select one disadvantage of a high-level langua

- ☐ It is easy to use to write program
- ☐ It uses English-like words easier to understand Ⓑ
- ☐ It is usuall derstand what the code does Ⓒ
- ☐ It is sl exe than machine code Ⓓ

4 A programmer uses a high-level language to produce a program. What is the type of code they are producing at this point?

- ☐ Assembler code Ⓐ
- ☐ Line code Ⓑ
- ☐ Source code Ⓒ
- ☐ Binary code Ⓓ

5 Which language would be the most difficul gramer to program in?

- ☐ Assembly language Ⓐ
- ☐ High-level language
- ☐ Machi Ⓒ
- ☐ Op co

6 Which of t

- ☐ Assemb
- ☐ Interro
- ☐ Compil
- ☐ Interpr

7 What type

- ☐ High-le
- ☐ Bottom
- ☐ Low-lev
- ☐ Mid-lev

8 Once a pro

- ☐ Assemb
- ☐ Compil
- ☐ Interpr
- ☐ Organis

9 Which tran

- ☐ Compil
- ☐ Assemb
- ☐ Interpr
- ☐ Genera

10 Which is no

- ☐ Source
- ☐ Easy to
- ☐ Code d
- ☐ Easier f

11 What trans

- ☐ Compil
- ☐ Interpr
- ☐ The she
- ☐ Assemb

12 **Which translator converts the source code to machine code in o[illegible]?**

- ☐ Compiler Ⓐ
- ☐ Interpreter Ⓑ
- ☐ Assembler Ⓒ
- ☐ IDE Ⓓ

13 **What is a[illegible]ed [illegible]:**

- ☐ To com[illegible]rce code into assembler code Ⓐ
- ☐ To write up a test plan Ⓑ
- ☐ To create and edit a program Ⓒ
- ☐ To create flow chart algorithms Ⓓ

14 **What would be the type of translator used at X to convert assembly code into machine code?**

- ☐ Compiler Ⓐ
- ☐ Interpreter Ⓑ
- ☐ Integrator Ⓒ
- ☐ Assembler Ⓓ

15 **What feature of an IDE does the programmer use to [illegible]nte[illegible]source code?**

- ☐ Run-time environment Ⓐ
- ☐ Editor Ⓑ
- ☐ Debugger Ⓒ
- ☐ Transla[illegible]

16 **What is the**

- ☐ To tran
- ☐ To iden
- ☐ To com
- ☐ To chec

17 **What is the**

- ☐ A part o
- ☐ A tool i
- ☐ A progr
  (1s and
- ☐ The par

18 **Select the c**

- ☐ Compu
- ☐ Compu
  that fol
- ☐ Using e
- ☐ A langu

19 **An advanta**

- ☐ Prograr
- ☐ Prograr
- ☐ Produc
- ☐ Prograr

20 **What type**

- ☐ Text file
- ☐ Docum
- ☐ Graphic
- ☐ Executa

21 What is the purpose of a translator?

- ☐ To convert input instructions to actions a computer can perform Ⓐ
- ☐ To convert instructions from the CPU to actions on a computer screen Ⓑ
- ☐ To convert programming language into machine code Ⓒ
- ☐ To convert machine code into object code Ⓓ

22 What does IDE stand for?

- ☐ Integrated Debugging Environment Ⓐ
- ☐ Integral Development Environment Ⓑ
- ☐ Integrated Development Engine Ⓒ
- ☐ Integrated Development Environment Ⓓ

23 What feature of an IDE helps the programmer to read the code and avoid introducing syntax errors when writing their code?

- ☐ Text editor Ⓐ
- ☐ Debugger Ⓑ
- ☐ Syntax highlighting Ⓒ
- ☐ Shell Ⓓ

24 To produce professional quality code consistently and efficiently, using an IDE to code is essential. True or false?

- ☐ TRUE Ⓐ
- ☐ FALSE Ⓑ

Component 2 Multiple-choice Questions – Answers

Question	Correct Answer(s)	Additional Comment
2.1 Algorithms [1]		
1	C	
2		The map shown in a satnav device will only show the roads, their names an trees, will not be shown. This is an example of abstraction.
3	A	Breaking a big problem down into smaller problems makes it easier to solv
4	A	-
5	A	Algorithmic thinking uses algorithms to help solve a problem using step-b
6	B	The processing required to calculate the area of a rectangle is Length of re
7	D	Name and birth_month are the two inputs needed to be able to create the
8	C	The user needs to select (input) the wa le required. The computer the
9	D	-
10	C	The oval shape (te is used to represent the start and end of a flow
11	D	The rec gle s represents a process or job to be done.
12	B, C	s and pseudocode are both ways of visually representing an algc
13		race tables are useful for spotting logical errors in a program.
14		-
15	A	-
16	A	The rectangle symbol represents a process or job to be done.
17	B	The diamond shape represents a decision in a process.
18	B	Insertion sort builds the final list one item at a time and not two.
19	A	-
20	B	-
21	D	5 steps altoget h number has to be counted as a step as it needs
22	D	-
23	B	
24		-
25	A	-

Question	Correct Answer(s)	Additional Commen
2.1 Algorithms [2]		
1	B	
2		Trees and shrubs information is not required on a satnav in order to reach
3	C	When a piece of code is developed for one program, the same piece of co
4	C	You are only required to learn these three computational thinking principle
5	C	The parallelogram represents the input or output in the algorithm.
6	D	The oval represents the start and end of an algorithm.
7	C	A subprogram is a small piece of programming code that performs a speci
8	A	Connecting lines are used to show the flow of direction and how one instru
9	B	Pseudocode uses text to show the [illegible] algorithm. Symbols are not u
10	C	-
11	A	-
12	D	-
13	B	
14		-
15	A	-
16	C	-
17	D	-
18	C	The linear search algorithm tests each item in the list one after another (se
19	A	-
20	A	-
21	D	-
22	B	-
23	D	
24		-
25	C	The algorithm will search for the number 15. The list is searched step by ste
26	A	-

Question	Correct Answer(s)	Additional Comment
2.2 Programming Fundamentals [1]		
1	B	
2		-
3	C	-
4	A	-
5	B	Modulus is the remainder of a division.
6	D	Exponentiation means 'to the power of', e.g. 5**2 is 5*5 = 25.
7	A	-
8	A	The assignment operator, =, is used to assign values to variables and const
9	C	The Boolean data type can represent two values: true or false (1 or 0).
10	C	!=
11	B	=
12	D	
13	A	
14		-
15	B	A real data type is numeric data in decimal format.
16	B	A string data type is made up of characters. They can contain text, symbols
17	A	An integer data type is a whole number (no decimal part).
18	A	The Boolean data type can represent two values: true or false (1 or 0).
19	D	A real data type is numeric data in decimal format.
20	C	A character data type is a single character from a character set, such as ASC
21	B	-
22	C	A function MUST return a value.
23	A	A constant is something that does not change.
24		Arrays are called lists in Python programming.
25	B	Most items in an array, or list, will start at 0, not 1.
26	D	-

Question	Correct Answer(s)	Additional Commen
2.2 Programming Fundamentals [21		
1	C	
2		By pressing buttons on a game controller, the user is inputting data to the
3	B	A sequence is a series of instructions following on from each other.
4	B	Iteration is when a program repeats something a number of times.
5	D	Selection involves making a choice; a decision has to be made.
6	A	Most programs require the user to input some data, e.g. pressing buttons
7	D	-
8	C	Programs usually give the user some information that can be viewed; this i
9	B	A procedure receives data from a [illegible] and performs an action on this
10	B	Iteration is when a program repeats something a number of times.
11	B	A sequence is a series of instructions following on from each other.
12	C	Iteration is when a program repeats something a number of times.
13	A	
14		-
15	D	-
16	C	Data can be stored in many different forms, called data types. These types
17	C	A character data type is a single character from a character set, such as ASC
18	A	The Boolean data type can represent two values: true or false (1 or 0).
19	C	All databases have a structure. They are made up of tables, records and fiel
20	A	All databases have a structure. They are made up of tables, records and fiel
21	D	All databases have a structure. They are made up of tables, records and fiel
22	C	-
23	A	The wildcard * symbol in SQL means it can represent any number of charac
24		-
25	D	-

Question	Correct Answer(s)	Additional Commen
2.3 Producing Robust Progr (1)		
1	C	
2		-
3	A	Comments are used to explain what the program is about and what the co
4	D	Sensible variable names are used so that it is obvious what the purpose of
5	B	Indentation is used to show where selection and iterations occur in the pro
6	C	-
7	A	-
8	D	The use of comments allows other programmers to understand what the c
9	C	-
10	B	age_in_years states wh e ari name be storing. The others would w names is part o gi aintainability.
11	D	-
12	D	A is a program that tries to gain access to a website. A reCAPTCHA hel
13		Authenticating a user, such as through usernames and passwords.
14	B	-
15	A	The print function has been spelled incorrectly. The program will not run a
16	C	The program will run correctly. There is a spelling mistake in the text string the IDE. A person will need to spot the error.
17	B	The program will run and not show an erro but the program will not run c
18	C	-
19	C	-
20	D	-
21	C	
22		
23		All email addresses contain an @ so this could be checked for. It is not foo
24	A	-
25	D	-

Question	Correct Answer(s)	Additional Commen
2.3 Producing Robust Prog (2)		
1	D	
2		-
3	C	-
4	D	-
5	D	20 characters might work for many people's last names, but seems unnece
6	B	-
7	B	-
8	A	Indentation helps structure a program and is part of the maintainability of
9	A	-
10	B	Giving a variable a sensible and suitable name will tell the developer what t
11	A	-
12	B	10 is the upper boundary of what can be input. It is, therefore, boundary
13	D	
14		-
15	D	Amazing, but true!
16	A	25 is a valid age. 155 and 0.25 would be out of range. The text entry could text.
17	C	-
18	B	-
19	D	9 is on the boundary of acceptable data in the range 0–9.
20	A	6 is normal data in the range 0–9 so the input digit will be accepted.
21	C	A is an unnecessary type of data because it is not a digit in the range 0–9.
22	B	
23		
24		-
25	D	-

Question	Correct Answer(s)	Additional Comment
2.4 Boolean Logic [1]		
1	A	-
2		-
3	D	-
4	A	-
5	C	Make sure you remember the symbols for AND, OR and NOT logic gates.
6	B	
7	D	
8	B	-
9	A	Make sure you remember the symbols when writing Boolean expressions
10	C	
11	D	
12	C	-
13	C	-
14		-
15	C	-
16	B	The AND gate requires both input, 1 AND 1 to be 1 for an output of 1. All o
17	B	
18	B	
19	D	-
20	C	-
21	B	-
22	D	-
23	A	A NOT gate will convert the input to the opposite state.
24	A	A NOT gate will convert the input to the opposite state.
25	A	-

Question	Correct Answer(s)	Additional Comment
2.4 Boolean Logic [2]		
1	D	
2		-
3	C	-
4	C	-
5	C	-
6	B	-
7	D	-
8	A	This is a NOT gate. The input (1) becomes NOT 1, it is inverted to 0.
9	B	This is a NOT gate. The input (0) b[illegible] NOT 0; it is inverted to 1.
10	C	-
11	D	XOR is the [illegible] gate
12	B	
13	D	[illegible]ther of the inputs on an OR gate is 1, the output will be 1. A OR B has t
14		
15	A	An exclusive OR gate will output 1 if only one of the inputs is a 1. This is dif inputs are 1 and both inputs are 1.
16	D	-
17	D	Both the AND gate and the OR gate will give an output of 1 if both inputs a
18	C	-
19	D	-
20	A	-
21	B	XOR is [illegible] exclusive OR gate.
22	C	
23	[illegible]	
24		-
25	B	The combining of an AND and a NOT gate will create a NOT AND gate, NA

Question	Correct Answer(s)	Additional Comment
2.5 Programming Languages and Integrated Development Environments [1]		
1	C	
2		-
3	A	An assembler translates assembly code into machine code.
4	B	A compiler turns the source code from a high-level language to a lower-lev
5	A	-
6	B	-
7	D	-
8	A	-
9	D	-
10	B	-
11	C	-
12	C	High-level languages, such as Python, C and Java, are quite easy for humar
13	B	Binary is very difficult for humans to read and understand but the CPU in a
14		Assembly language is quite difficult for humans to work with, but it is conv
15	A	-
16	B	-
17	B	-
18	A	The Python IDE is called IDLE. Other editors are available too.
19	C	-
20	B	Not necessarily – the code is all in one file. Of course, the IDE has tools to the code by itself.
21	D	-
22	A	The interpreter converts (interprets) one line of code at a time. If it comes ac
23		In Python, program code is output to the shell. If an error occurs, the progr
24		-
25	C	-

Question	Correct Answer(s)	Additional Comment
2.5 Programming Languages and Integrated Development Environments [2]		
1	D	
2	[illegible]	-
3	[illegible]	-
4	C	-
5	C	Machine code is binary code. Humans find it difficult to code in binary, but
6	B	-
7	C	-
8	B	Once a program has been developed, a compiler will turn it into an executa
9	C	-
10	A	-
11	B	-
12	A	-
13	C	
14	[illegible]	-
15	B	-
16	B	-
17	C	-
18	B	High-level languages are English-like and are easier to learn and understan
19	C	-
20	D	-
21	C	All programs need to be translated into machine code (binary) so that the C
22	D	-
23	C	
24	[illegible]	An IDE provides tools to make both coding and debugging more efficient -