

9626/04

# Cambridge International AS & A Level

## INFORMATION TECHNOLOGY Paper 4 Advanced Practical October/November 2022 MARK SCHEME

Maximum Mark: 90



This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2022 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

[Turn over © UCLES 2022

## **Generic Marking Principles**

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

### GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

### **GENERIC MARKING PRINCIPLE 2:**

Marks awarded are always whole marks (not half marks, or other fractions).

### **GENERIC MARKING PRINCIPLE 3:**

### Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit
  is given for valid answers which go beyond the scope of the syllabus and mark scheme,
  referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

# **GENERIC MARKING PRINCIPLE 4:**

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

## **GENERIC MARKING PRINCIPLE 5:**

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

### GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

© UCLES 2022 Page 2 of 17

9626/04

Question	Answer	Marks
1(a)	There is a clear attempt to determine the mark for each question.	1
	The whole set of student numbers, responses, marks and totals are seen in a spreadsheet.	1
	The correct values for the student Score/Total Marks are calculated.	1
	A database is created with results from the spreadsheet.	1
	A table in the database contains fields for the marks and score/total without the letter responses.	1
	There is evidence of a parameter criterion for selecting a class.	1
	There is a suitable prompt for the input.	1
	The required class can be selected.	1
	The selection includes the student names, class, marks, score/total (only).	1
	A form is created to show the student information, marks and score/total.	1
	The selection/filtering shows 33 records for FE1	1
	Form Header text is correct and reads 'Test 102 results for class:'	1
	The Student Class name is displayed as a field in the header (gets the focus when clicked on).	1
	The class name in the header is dynamic; (matches the class name shown in student information).	1
	The correct 4 Student information fields display the correct data (ID, given name, surname, class).	1
	The student information labels, and fields size/format/position/alignment are correct.	1
	25 marks fields are displayed (not the a, b, c question responses).	1
	The score/total field is displayed.	1
	The 26 (marks+ score) fields are displayed in 2 equal columns.	1
	All field sizes adjusted to fit the content.	1
	The format/position/alignment of all labels and fields are consistent and correct.	1
	The correct scores/totals are seen for the whole set of selected students.	1
	The correct Pass, Resit, Retake Course results are seen for the whole selection.	1
	The results text is seen in the correct place with no label or outlines.	1

© UCLES 2022 Page 3 of 17

# October/November 2022

Question	Answer	Marks
1(a)	The result text matches score for the whole selection.	1
	The 'Pass' text is green.	1
	The 'Resit/Retake the course' text is red.	1
		27
1(b)	There is evidence of an attempt to identify incorrect questions.	1
	There is evidence of an attempt to create a list of incorrect questions.	1
	Each incorrect question includes "Q" prefix, e.g. Q1, Q2 etc.	1
	A complete set of the incorrect questions is seen in a delimited contiguous list.	1
	The merge document contains mergefields and prompts for linked data.	1
	The date is shown as a field in the correct format (dd MMMM – yyyy)	1
	The Student_ID mergefield is inserted.	1
	The full name (GivenName Surname) mergefield(s) are inserted.	1
	The Class mergefield is inserted.	1
	The spacing of the ID, Names, Class block is correct/suitable.	1
	The student Score/Total mergefield is inserted.	1
	Conditional mergefields are inserted to display the correct 'Pass', 'Resit', 'Retake…'results.	1
	The mergefields uses correct criteria for the results.	1
	The correct three text options are used only once in the mergefields.	1
	The conditional mergefields are in a single nest.	1
	A conditional mergefield is inserted for the "Answered correctly/incorrectly text".	1
	A single criterion is used the display the text.	1
	The text is correct and matches the criterion.	1
	A mergefield to display the list of incorrect questions is used.	1
	The merge field to display the text and the list are nested.	1
	The letters merged into an editable document.	1
	The are 33 letters in the document (Filtered for FE1).	1
	Each letter displays the correct Score/Total	1

© UCLES 2022 Page 4 of 17

Question	Answer	Marks
1(b)	Each letters displays the correct result "Pass/Resit/Retake".	1
	The text "You answered all the questions correctly" is displayed for Jessica .	1
	The text "You answered the following questions incorrectly" is displayed for all others.	1
	A list of errors is displayed on all letters except for Jessica.	1
	All letters are complete and fit for purpose. (All spelling, contents, formatting and spacing is correct and appropriate).	1
		28

Question	Answer	Mark
2	The plane Fuselage (as distinct from wings, tail, nose) has the correct shape (4 joints, no curves/gaps) and has a continuous thin outline.	1
	The wings are distinct from the fuselage and have the correct shape. The first wing has a curved leading edge and both wings have a continuous thin outline.	1
	The tail area is complete with the correct components and shape. There are 2 distinct tail wings, both with continuous thin outlines.	1
	The nose and propeller have the correct shape. The cone is symmetrical, curved, black and pointed. The propellor is grey.	1
	The cockpit is the correct shape. The top is straight, in line with the fuselage. The sides are slanted, the bottom is curved and all have continuous thin outlines.	1
	The roundel design on the fuselage is correct. There is a black, circle with a thin outline; the number 42 is place centrally with the correct proportions.	1
	The position and the perspective of the roundel on both wings is suitable. The roundels are angled along the axis of the wing and both have suitable horizontal perspectives.	1
	The banner is connected to the plane and has the correct shape. There are 2 evenly spaced peaks/humps; both ends are vertical.	1
	The text on the banner is correct. The path of the letters follows the shape of the banner. The text is central.	1
	The colour of the plane is a consistent shade of yellow. The banner is a consistent shade of red. The text is black.	1
		10

© UCLES 2022 Page 5 of 17

Question	Answer	Marks
3	The frame size of the animation is set to 1280 px by 720 px	1
	The correct TTC building image is used. The image spans the bottom of the frame. The background remains complete throughout the amination.	1
	The Sky.png image is applied as a layer. The image fills the rest of the frame in the position shown in the question paper.	1
	The Cloud.png image is applied as a layer in the correct position. It covers approximately three quarters of the frame without a gap at the left.	1
	The plane enters with a downward path and orientation.	1
	The plane passes behind the cloud on both passes.	1
	The plane can be seen through the cloud.	1
	The plane follows a suitable looped path.	1
	The plane remains suitably oriented during all parts of the looped path.	1
	The plane re-enters from the right with a downward path and orientation after 1 second.	1
	The plane follows the curved path and is suitably oriented at all times.	1
	Each path takes 6 seconds.	1
	The plane exits the frame completely after each path.	1
	The plane travels smoothly at an even speed at all times.	1
	The animation restarts after 1 second. There is no discernible resetting.	1
		15

Question	Answer	Mark
4	All MouseOvers work. Each cell displays the alternative text.	1
	All MouseOuts work. Each cell displays the default text.	1
	All MouseOver text is correct.	1
	All MouseOut text is correct and matches the original default text.	1
	The correct onmouseover function names are used and match those shown in the html.  All three functions, Sc1(), CompSci1() and Eng1() are used.	1
	The correct onmouseout function names are used and match those shown in the html. All three functions, Sc2(), CompSci2() and Eng2() are used.	1

© UCLES 2022 Page 6 of 17

Question	Answer	Marks
4	The document.getElementById(Placeholder id) method is used in each function.	1
	The .innerHTML = "Text or variable" element is used in each function.	1
	At least one annotation inserted.	1
	The web page is intact and loads/refreshes without errors.	1
		10

© UCLES 2022 Page 7 of 17

# **Exemplar solutions**

# Task 1(a)

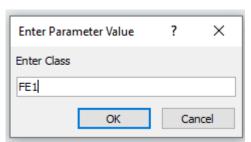
4	А		В	С	D	Ε	F	G	Н	1	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	Х	Υ	Z	AA		
1	Student	t_ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Class		
2		232	e	d	d	d	b	b	d	e	d	e	b	d	e	e	a	a	a	d	d	d	a	b	b	a	a	FE1		
3		233	d	d	а	d	b	b	d	e	d	e	e	b	e	a	c	e	d	b	d	C	C	b	a	c	a	FE3		
4		234	a	d	b	d	b	b	d	e	d	e	b	d	e	b	d	e	b	c	а	а	а	а	d	d	e	FE5		
5		235	b	d	C	d	C	C	b	d	b	a	c	b	C	b	d	e	a	d	d	d	a	b	b	а	a	FE3		
6		236	c	C	b	e	C	e	e	а	а	c	c	d	а	e	e	e	e	c	e	c	e	d	b	b	c	FE2		
151		386	a	a	c	c	e	d	b	e	d	b	b	d	e	e	a	a	a	d	d	b	a	c	e	d	d F	E4		
152		390	e	b	e	d	d	b	b	d	d	c	b	d	e	e	a	a	a	d	d	d	a	b	e	b	e F	E4		
153		396	e	а	b	e	c	c	а	b	e	e	b	d	e	e	a	a	a	d	d	c	e	d	c	b	d F	E4		
154		397	b	c	c	d	e	c	d	e	b	b	b	d	e	e	a	a	a	d	d	e	c	e	e	d i	a F	E5		
155		399	d	d	b	e	b	c	e	c	d	d	b	d	e	e	a	a	a	d	d	e	c	b	e	b	d F	E5		
100																														
AB	AC	AD	Α	Е	AF	А	G	АН	1	AI.	AJ	AK	AL	.   4	M	AN	AO	AP	AC	) A	R	AS	АТ	AU	ΑV	AW	AX	AY	AZ	BA
1ark	Mark I	Mark	Ma	ırk	Mark	Ma	ark	Marl	k Ma	ark	Mark	Mar	k Mai	rk M	ark N	Иark	Mark	Mark	Mar	k Ma	rk N	1ark N	/lark	Mark	Mark	Mar	k Mar	k Mark	Mark	
	2 3	3	4		5	6		7	8		9	10	11	12	1	.3	14	15	16	17	1	8 1	9	20	21	22	23	24	25	Score
1	1	1		1	1	L	1		1	1	1	l :	1	1	1	1	1	1	L	1	1	1	1	1	1	L :	1	1 1	1	25
0	1	0		1	1	L	1		1	1	1	L	1	0	0	1	0	C	)	0	0	0	1	0	C	)	1	0 0	1	12
0	1	0		1	1	L	1	:	1	1	1	L	1	1	1	1	0	C	)	0	0	0	0	0	1	L (	D	0 0	0	12
0	1	0		1	C	)	0	(	D	0	0	)	0	0	0	0	0	C	)	0	1	1	1	1	1	1	1	1 1	1	10
0	0	0		0	C	)	0	(	D	0	(	)	0	0	1	0	1	C	)	0	0	0	0	0	C	) (	D	1 0	0	;
0	1	0		0	1	L	0	(	0	0	1	L	0	1	1	1	1	1	l	1	1	1	1	0	C	)	1	0 0	0	13

There is a clear attempt to determine the mark for each question.	1
The whole set of student numbers, responses, marks and totals are seen in a spreadsheet.	1
The correct values for the student Score/Total Marks are calculated.	1

© UCLES 2022 Page 8 of 17

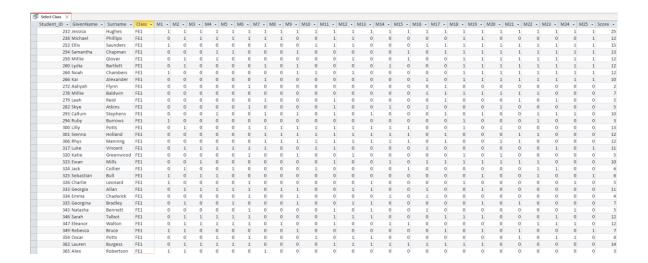
A database is created with results from the spreadsheet.	1
A table in the database contains fields for the marks and score/total without the letter responses.	1





There is evidence of a parameter criterion for selecting a class.	1
There is a suitable prompt for the input.	1
The required class can be selected.	1

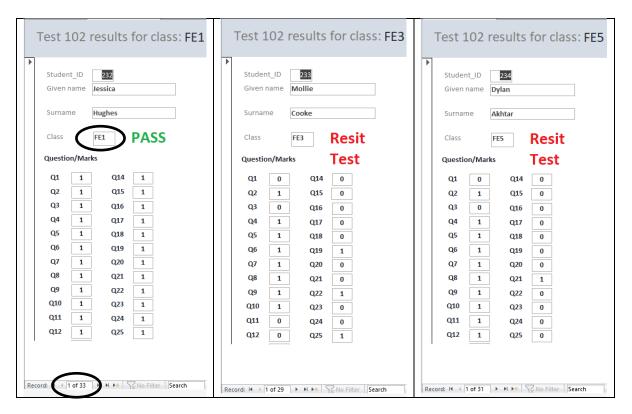
© UCLES 2022 Page 9 of 17



The selection includes the student names, class, marks, score/total (only).

1

© UCLES 2022 Page 10 of 17



A form is created to show the student information, marks and score/total.	1
The selection/filtering shows 33 records for FE1	1
Form Header text is correct and reads Test 102 results for class:	1
The Student Class name is displayed as a field in the header (gets the focus when clicked on).	1
The class name in the header is dynamic; (matches the class name shown in student information).	1
The correct 4 Student information fields display the correct data (ID, given name, surname, class).	1
The student information labels, and fields size/format/position/alignment are correct.	1
25 marks fields are displayed (not the a, b, c question responses).	1
The score/total field is displayed.	1
The 26 (marks+ score) fields are displayed in 2 equal columns.	1
All field sizes adjusted to fit the content.	1
The format/position/alignment of all labels and fields are consistent and correct.	1
The correct scores/totals are seen for the whole set of selected students.	1
The correct Pass, Resit, Retake Course results are seen for the whole selection.	1
The results text is seen in the correct place with no label or outlines.	1

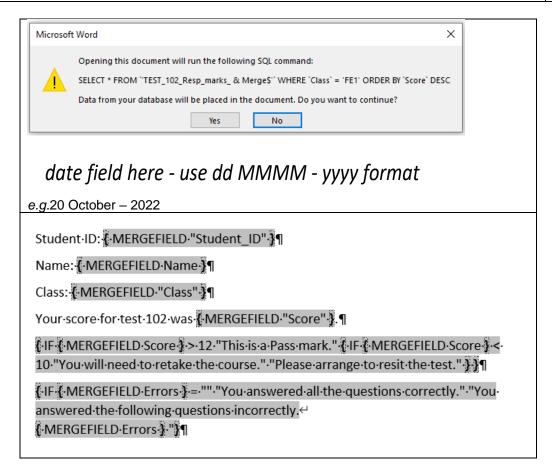
© UCLES 2022 Page 11 of 17

The result text matches score for the whole selection.	1
The 'Pass' text is green.	1
The 'Resit/Retake the course' text is red.	1
	27

## Task 1(b)

	CA
	List of Errors
	Q1, Q3, Q11, Q12, Q14, Q15, Q16, Q17, Q18, Q20, Q21, Q23, Q24
i	Q1, Q3, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q22, Q23, Q24, Q25
	Q1, Q3, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16
i	Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q13, Q15, Q16, Q17, Q18, Q19, Q20, Q21, Q22, Q24, Q25

There is evidence of an attempt to identify incorrect questions.	1
There is evidence of an attempt to create a list of incorrect questions.	1
Each incorrect question includes "Q" prefix, e.g. Q1, Q2 etc.	1
A complete set of the incorrect questions is seen in a delimited contiguous list.	1



© UCLES 2022 Page 12 of 17

The merge document contains mergefields and prompts for linked data.	1
The date is shown as a field in the correct format (dd MMMM – yyyy)	1
The Student_ID mergefield is inserted.	1
The full name (GivenName Surname) mergefield(s) are inserted.	1
The Class mergefield is inserted.	1
The spacing of the ID, Names, Class block is correct/suitable.	1
The student Score/Total mergefield is inserted.	1

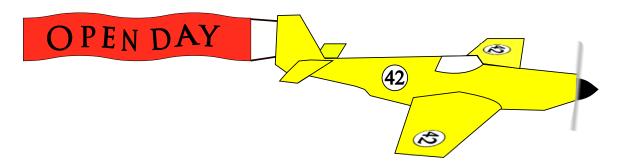
Conditional mergefields are inserted to display the correct 'Pass', 'Resit', 'Retake'results.	1
The mergefields uses correct criteria for the results.	1
The correct three text options are used only once in the mergefields.	1
The conditional mergefields are in a single nest.	1
A conditional mergefield is inserted for the "Answered correctly/incorrectly text".	1
A single criterion is used the display the text.	1
The text is correct and matches the criterion.	1
A mergefield to display the list of incorrect questions is used.	1
The mergefield to display the text and the list are nested.	1

Student Id: 232	Student Id: 252
Name: Jessica Hughes	Name: Ellis Saunders
Class: FE1	Class: FE1
Your score for Test 102 was 25.	Your score for Test_102 was 15.
– This is a Pass mark.	This is a Pass mark.
	You answered the following questions incorrectly.
You answered all the questions correctly.	Q2, Q3, Q4, Q5, Q6, Q8, Q9, Q13, Q14, Q15
Student Id: 306	Student Id: 354
Name: Rhys Manning	Name: Oscar Potts
Class: FE1	Class: FE1
Your score for Test_102 was 12.	Your score for Test_102 was 8.
Please arrange to retake the test.	You will need to retake the course.
You answered the following questions incorrectly. Q1, Q2, Q3, Q4, Q5, Q6, Q16, Q18, Q19, Q22, Q23, Q24, Q25	You answered the following questions incorrectly. Q1, Q2, Q3, Q5, Q7, Q8, Q9, Q11, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q22, Q25

© UCLES 2022 Page 13 of 17

The letters merged into an editable document.	1
The are 33 letters in the document (Filtered for FE1).	1
Each letter displays the correct Score/Total	1
Each letters displays the correct result "Pass/Resit/Retake".	1
The text "You answered all the questions correctly" is displayed for Jessica .	1
The text "You answered the following questions incorrectly" is displayed for all others.	1
A list of errors is displayed on all letters except for Jessica.	1
All letters are complete and fit for purpose. (All spelling, contents, formatting and spacing is correct and appropriate).	1
	28

# Task 2

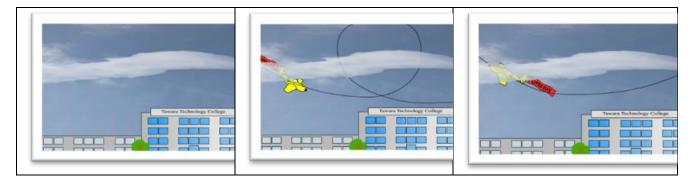


The plane Fuselage (as distinct from wings, tail, nose) has the correct shape (4 joints, no curves/gaps) and has a continuous thin outline.	1
The wings are distinct from the fuselage and have the correct shape. The first wing has a curved leading edge and both wings have a continuous thin outline.	1
The tail area is complete with the correct components and shape. There are 2 distinct tail wings, both with continuous thin outlines.	1
The nose and propeller have the correct shape. The cone is symmetrical, curved, black and pointed. The propellor is grey.	1
The cockpit is the correct shape. The top is straight, in line with the fuselage. The sides are slanted, the bottom is curved and all have continuous thin outlines.	1
The roundel design on the fuselage is correct. There is a black, circle with a thin outline; the number 42 is place centrally with the correct proportions.	1
The position and the perspective of the roundel on both wings is suitable. The roundels are angled along the axis of the wing and both have suitable horizontal perspectives.	1
The banner is connected to the plane and has the correct shape. There are 2 evenly spaced peaks/humps; both ends are vertical.	1

© UCLES 2022 Page 14 of 17

The text on the banner is correct. The path of the letters follows the shape of the banner. The text is central.	1
The colour of the plane is a consistent shade of yellow. The banner is a consistent shade of red. The text is black.	1
	10

# Task 3



The frame size of the animation is set to 1280px by 720px	1
The correct TTC building image is used. The image spans the bottom of the frame. The background remains complete throughout the amination.	1
The Sky.png image is applied as a layer. The image fills the rest of the frame in the position shown in the question paper.	1
The Cloud.png image is applied as a layer in the correct position. It covers approximately three quarters of the frame without a gap at the left.	1
The plane enters with a downward path and orientation.	1
The plane passes behind the cloud on both passes.	1
The plane can be seen through the cloud.	1
The plane follows a suitable looped path.	1
The plane remains suitably oriented during all parts of the looped path.	1
The plane re-enters from the right with a downward path and orientation after 1 second.	1
The plane follows the curved path and is suitably oriented at all times.	1
Each path takes 6 seconds.	1
The plane exits the frame completely after each path.	1
The plane travels smoothly at an even speed at all times.	1
The animation restarts after 1 second. There is no discernible resetting.	1
	15

© UCLES 2022 Page 15 of 17

### Task 4

### <script>

var Scitext1="Our Science faculty rates as one of the best in the world. Our award-winning staff include a Nobel prize winner and 2 winners of the prestigious Norma Dent Prize. With state-of-the-art equipment, including our own 'Collider', our research facilities are second to none.";
var Scitext2="MouseOver here for information about the Science faculty.";

var Comptext1="Our Computer facilities and resources are world beating. Students have full access to a network of innovative Quantum computers and can investigate all the answers to everything in the Universe."

var Comptext2="MouseOver here for information about the Computer Science faculty.";

var Engtext1="The Engineering Faculty is a world leader in the search for a perpetual motion machine and free energy. Recently we have received universal acclaim for improvements to the wheel.":

var Engtext2="MouseOver here for information about the Engineering faculty.";

```
// Insert code to display the correct MouseOver text
function Sci1()
{ document.getElementById("Science").innerHTML = Scitext1;}

function Sci2()
{ document.getElementById("Science").innerHTML = Scitext2;}

function CompSci1()
{ document.getElementById("ComputerScience").innerHTML = Comptext1;}

function CompSci2()
{ document.getElementById("ComputerScience").innerHTML = Comptext2;}

function Eng1()
{ document.getElementById("Engineering").innerHTML = Engtext1;}

function Eng2()
{ document.getElementById("Engineering").innerHTML = Engtext2;}
```

#### </script>

All MouseOvers work. Each cell displays the alternative text.	1
All MouseOuts work. Each cell displays the default text.	1
All MouseOver text is correct.	1
All MouseOut text is correct and matches the original default text.	1

© UCLES 2022 Page 16 of 17

The correct onmouseover function names are used and match those shown in the html. All three functions, Sc1(), CompSci1() and Eng1() are used.	1
The correct onmouseout function names are used and match those shown in the html. All three functions, Sc2(), CompSci2() and Eng2() are used.	1
The document.getElementById(Placeholder id) method is used in each function.	1
The .innerHTML = "Text or variable" element is used in each function.	1
At least one annotation inserted.	1
The web page is intact and loads/refreshes without errors.	1
	10

© UCLES 2022 Page 17 of 17