

**52nd INTERNATIONAL
CHEMISTRY OLYMPIAD
2020
UK Round One
STUDENT ANSWER BOOK**

In order to print your certificate, we need to store your name, school, and mark in a database: these details are only viewable by your school and the RSC Chemistry Olympiad Working Group.

Your participation in the competition indicates that you are happy for us to do this.

Please PRINT details clearly:

Name

Nationality

Date of birth

School Year (e.g. Year 12, Scottish Higher)

Date paper taken

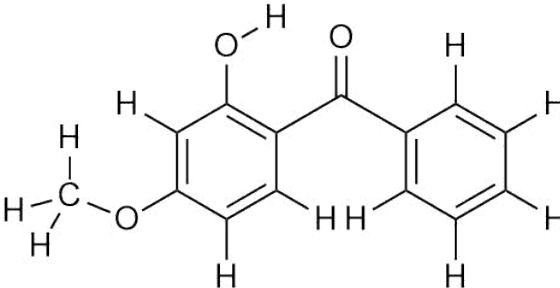
School use:

Centre number

Question	1	2	3	4	5	6	Total
Marks Available	10	10	17	12	17	20	86
Marks Scored							

1.	This question is about calcium carbide	Mark
(a)	(i)	<input type="checkbox"/>
	(ii)	<input type="checkbox"/>
(b)		<input type="checkbox"/>
(c)		<input type="checkbox"/> <input type="checkbox"/>
(d)		<input type="checkbox"/> <input type="checkbox"/>
(e)		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	<i>Total out of 10</i>	<input type="checkbox"/>

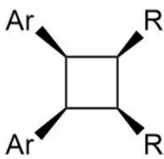
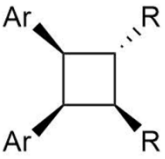
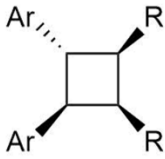
2.	This question is about hydrogen as a fuel	Mark
(a)		<input type="checkbox"/>
(b)		<input type="checkbox"/>
(c)		<input type="checkbox"/>
(d)		<input type="checkbox"/> <input type="checkbox"/>
(e)		<input type="checkbox"/>
(f)		<input type="checkbox"/>
(g)		<input type="checkbox"/>
(h)		<input type="checkbox"/> <input type="checkbox"/>
<i>Total out of 10</i>		<input type="checkbox"/>

3.	This question is about sun cream	Mark	
(a)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">ester</div> <div style="text-align: center;">aldehyde</div> <div style="text-align: center;">ketone</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">carboxylic acid</div> <div style="text-align: center;">ether</div> <div style="text-align: center;">phenol</div> </div>	<input type="checkbox"/>	
(b)		<input type="checkbox"/>	
(c)	A	B	<input type="checkbox"/>
	C	D	<input type="checkbox"/>
(d)	(i)	<input type="checkbox"/>	

	(ii)		<input type="checkbox"/>
(e)	E	F	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	G	H	
(f)	<p>The same molecular formula</p> <p>The same melting points</p> <p>Rotate plane-polarised light in the same direction</p>		<input type="checkbox"/>

(g)

(i)

Substituents on the same face	Truxinates	
Four		
Has enantiomer?	YES	NO
Three		
Has enantiomer?	YES	NO
	YES	NO

(ii)

Substituents on the same face	Truxinates	
Two		
Has enantiomer?	YES	NO
Two (continued)		
Has enantiomer?	YES	NO

Note: Not all boxes need to be used.

Total out of 17



4.	This question is about silicon oxides	Mark
(a)	(i)	<input type="checkbox"/>
	(ii)	<input type="checkbox"/>
	(iii)	<input type="checkbox"/>
(b)		<input type="checkbox"/>
(c)		<input type="checkbox"/>
(d)	(i)	<input type="checkbox"/>

(ii)

(e)

(f)

Total out of 12

5.	This question is about colourful compounds	Mark
(a)		<input type="checkbox"/>
(b)	(i)	<input type="checkbox"/>
	(ii)	<input type="checkbox"/> <input type="checkbox"/>
(c)	(i)	<input type="checkbox"/>
	(ii)	<input type="checkbox"/>

(iii)



(d)



(e)



(f)

(g)

Total out of 17

6.	This question is about anammox and ladderanes.			Mark
(a)	(i) nitrogen gas	ammonium ion		<input type="checkbox"/>
	(ii) nitrite ion (NO_2^-)	hydrazine (NH_2NH_2)	hydroxylamine (NH_2OH)	<input type="checkbox"/> <input type="checkbox"/>
(b)	(i)			<input type="checkbox"/>
	(ii)			<input type="checkbox"/>
	(iii)			<input type="checkbox"/>
(c)				<input type="checkbox"/>
(d)	A	B		<input type="checkbox"/> <input type="checkbox"/>

C	D	<input type="checkbox"/> <input type="checkbox"/>
Anion E ⁻	F	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
G	X	<input type="checkbox"/> <input type="checkbox"/>
H	I	<input type="checkbox"/> <input type="checkbox"/>

J

K

Total out of 20