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 .....

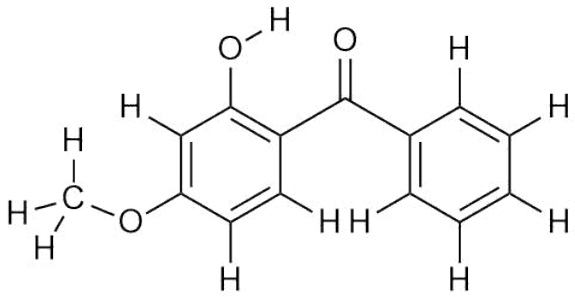
School use:

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)	
	(ii)	
(b)		
(c)		
(d)		
(e)		
	Total out of 10	

2.	This question is about hydrogen as a fuel	Mark
(a)		
(b)		
(c)		
(d)		
(e)		
(f)		
(g)		
(h)		
	Total out of 10	

3.	This question is about sun cream	Mark
(a)	ester aldehyde ketone carboxylic acid ether phenol	
(b)		
(c)	**A** **B** **C** **D**	
(d)	(i)	

(ii)

(e)

E	**F**
G	**H**

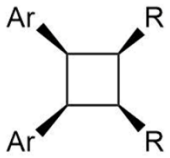
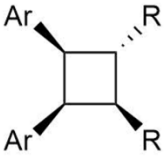
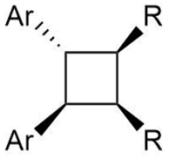
(f)

The same molecular formula

The same melting points

Rotate plane-polarised light in the same direction

(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	YES NO
Two (continued)		
Has enantiomer?	YES NO	YES NO

Note: Not all boxes need to be used.

Total out of 17

4.	This question is about silicon oxides	Mark
(a)	(i)	
	(ii)	
	(iii)	
(b)		
(c)		
(d)	(i)	

(ii)

(e)

(f)

Total out of 12

5.	This question is about colourful compounds	Mark
(a)		
(b)	(i)	
	(ii)	
(c)	(i)	
	(ii)	

	(iii)	
(d)		
(e)		

(f)

(g)

Total out of 17

6.	This question is about anammox and ladderanes.			Mark
(a)	(i) nitrogen gas		ammonium ion	
	(ii) nitrite ion (NO_2^-)	hydrazine (NH_2NH_2)	hydroxylamine (NH_2OH)	
(b)	(i)			
	(ii)			
	(iii)			
(c)				
(d)	**A**	**B**		

C	**D**	☐ ☐
Anion E^-	**F**	☐ ☐ ☐
G	**X**	☐ ☐
H	**I**	☐ ☐

J

K

Total out of 20