

**PERCUBAAN SPM
NEGERI PERLIS 2019**

CHEMISTRY 3
MARKING SCHEME

**FOR EXAMINER'S USE
ONLY**

Questions	Mark Scheme	Mark
1(a)	Able to classify all the variables correctly	3
	<u>Sample Answer</u> <u>Manipulated variable:</u> <u>Hexene and Hexane//Type of hydrocarbon</u> <u>Responding variable:</u> Sootiness <u>Fixed variables:</u> Volume of hydrocarbon//concentration of hydrocarbon	
	Able to state any 2 variables correctly	2
	Able to state any 1 variable correctly or any three ideas	1
	No response or wrong response	0

Questions	Mark Scheme	Mark
1(b)	Able to state the relationship between the manipulated variable and the responding variable and stating the direction correctly <u>Sample answer</u> Hexene produce more soot than Hexane. Note: RV → MV score 2	3
	Able to state the relationship between the manipulated variable and the responding variable but less accurate in stating the direction <u>Sample answers</u> Hexene produce more soot	2
	Able to give an idea of hypothesis <u>Sample answer</u> Hexene/Hexane produce soot//Hexane/Hexene burns	1

Questions	Mark Scheme	Mark
1(c)(i)	Able to state one observations correctly Hexene produce more black spot/soot than Hexane	3
	Able to state one observations less correctly Hexene/hexane produce soot than Hexane	2
	Able to give an idea of the observation Hexene/Hexane burns	1
	No response or wrong response	0

Questions	Mark Scheme	Mark
1(c)(ii)	Able to state one inference related to the observations in (c)(i) correctly Hexene is unsaturated hydrocarbon, Hexane is saturated hydrocarbon //hexane has carbon carbon double bond	3
	Able to state one observations less correctly Hexene / Hexane is hydrocarbon	2
	Able to give an idea of the observation Hexene/Hexane is a compound	1
	No response or wrong response	0

Questions	Mark Scheme	Mark			
1(d)	Able to classify all the hydrocarbon given given into produce more soot and produce less soot. <u>Answer</u>	3			
	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Unsaturated hydrocarbon</th> <th>Saturated hydrocarbon</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Ethene Propene</td> <td style="text-align: center;">Methane Butane</td> </tr> </tbody> </table>		Unsaturated hydrocarbon	Saturated hydrocarbon	Ethene Propene
	Unsaturated hydrocarbon	Saturated hydrocarbon			
	Ethene Propene	Methane Butane			
	If reverse: score 1				
Able to classify any three of the hydrocarbon given into suitable methods.	2				
Able to classify any two the hydrocarbon given into suitable methods	1				
No response or wrong response	0				

Questions	Mark Scheme	Mark
1(e)	Able to state the relationship between the soot produced with time. <u>Sample answer</u> More soot produced when time increases//The higher the time,the more the soot produced.	3
	Able to state the relationship between the soot produced with time less correctly <u>Sample answer</u> The higher the time, the higher the soot produced.	2
	Able to give a relevant idea <u>Sample answer</u> The soot produce directly proportional with time.	1
	No response or wrong response	0

Questions	Mark Scheme	Mark
1(f)	Able to describe the following criteria: (i) What should be done (ii)What should be observed <u>Sample Answer</u> Black spot/black solid formed when hexane/hexane burns in oxygen.	3
	Able to describe either criteria (i) or (ii) <u>Sample Answer</u> 1.Black spot/black solid formed //when hexane/hexane burns in oxygen. 2.The dark spot formed when Hexene /Hexane burns in oxygen.	2
	Able to give an idea for sootines. <u>Sample Answer</u> The spot produced.	1
	No response or wrong response	0

Questions	Mark Scheme	Mark
1(g)	Able to predict the soot produced when ethanol is burnt. <u>Answer</u> No soot produced	3
	Able to predict the soot produced less correctly <u>Answer</u> Less soot produced	2
	Able to give an idea of prediction <u>Sample answer</u> Ethanol burnt	1
	No response or wrong response	0

Questions	Mark Scheme	Mark
2(a)	Able to record all the reading to two decimal places <u>Answer</u> Cu and Mg: 2.7V Cu and Zn: 1.1V Cu and Al: 2.0V	3
	Able to record any <u>two</u> readings correct to one decimal place	2
	Able to record any <u>one</u> reading correct to one decimal place or record all readings	1
	No response or wrong response	0

Questions	Mark Scheme	Mark								
2(b)	Able to construct the table to record the voltmeter for the experiment correctly. <u>Answer</u> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Pairs of metal//Set Pasangan logam//Set</th> <th>Voltmeter reading(V) Bacaan voltmeter(V)</th> </tr> </thead> <tbody> <tr> <td>Cu and Mg//I</td> <td>2.7</td> </tr> <tr> <td>Cu and Zn//II</td> <td>1.1</td> </tr> <tr> <td>Cu and Al//III</td> <td>2.0</td> </tr> </tbody> </table>	Pairs of metal//Set Pasangan logam//Set	Voltmeter reading(V) Bacaan voltmeter(V)	Cu and Mg//I	2.7	Cu and Zn//II	1.1	Cu and Al//III	2.0	3
	Pairs of metal//Set Pasangan logam//Set	Voltmeter reading(V) Bacaan voltmeter(V)								
	Cu and Mg//I	2.7								
	Cu and Zn//II	1.1								
Cu and Al//III	2.0									
Able to give any two readings less correctly	2									
Able to give any one reading.	1									
No response or wrong response	0									

Questions	Mark Scheme	Mark
2(c)	<p>Able to write the half equation at both electrodes correctly.</p> <p><u>Sample answer</u></p> <p>Negative electrode: $\text{Mg} \rightarrow \text{Mg}^{2+} + 2\text{e}$</p> <p>Positive electrode: $2\text{H}^+ + 2\text{e} \rightarrow \text{H}_2$</p>	3
	<p>Able to write the half equation at both electrodes less correctly</p> <p><u>Sample answer:</u></p> <p>Negative electrode: $\text{Mg} \rightarrow \text{Mg}^{2+} + \text{e}$</p> <p>Positive electrode: $\text{H}^+ + \text{e} \rightarrow \text{H}_2$</p>	2
	<p>Able to an idea of the half equation at both electrodes .</p> <p><u>Sample answer:</u></p> <p>Negative electrode: $\text{Mg} \rightarrow \text{Mg}^+ + \text{e}$</p> <p>Positive electrode: $\text{H}^+ + \text{e} \rightarrow \text{H}$</p>	1
	No response or wrong response	0

Questions	Mark Scheme	Mark
3(a)	<p>Able to state the aim of the experiment correctly</p> <p><u>Sample answer</u></p> <p>To arrange the position of carbon,aluminium and copper in the reactivity series</p>	3
	<p>Able to state the aim of the experiment less correctly</p> <p><u>Sample answer</u></p> <p>To arrange the position of carbon,aluminium and copper</p>	2
	<p>Able to state the idea of the aim of the experiment</p> <p>To arrange the metals</p>	1
	No response or wrong response	0

Questions	Mark Scheme	Mark
3(b)	<p>Able to state the three variables correctly</p> <p><u>Sample answer</u></p> <p><u>Manipulated variable:</u> Metal oxide//Aluminium oxide and copper(II) oxide</p> <p><u>Responding variable:</u> Reaction occur</p> <p><u>Fixed variables:</u> Carbon powder</p>	3
	Able to state the two variables correctly	2
	Able to state the any one variables correctly	1
	No response or wrong response	0

Questions	Mark Scheme	Mark
3(c)	<p>Able to state the relationship between manipulated variables and responding variable and state the direction correctly.</p> <p>When Aluminium oxide react with carbon, reaction does not occur,when copper(II)oxide react with carbon, reaction occur.</p> <p><u>Sample answer</u></p> <p>Note: RV → MV score 2</p>	3
	<p>Able to state the relationship between manipulated variables and responding variable without stating the direction.</p> <p><u>Sample answer</u></p> <p>1.Different types of oxide metals will produce different reaction. 2.Reaction occur, when copper(II) oxide react with carbon.</p>	2
	<p>Able to state an idea of hypothesis.</p> <p><u>Sample answer</u></p> <p>Oxides metals causes reaction</p>	1
	No response or wrong response	0

Questions	Mark Scheme	Mark
3(d)	Able to list all the material and apparatus.	3
	<u>Sample answer</u> <u>Material</u> Aluminium oxide powder, Copper(II) oxide powder, carbon powder <u>Apparatus</u> Spatula ,crucible, clay pipe triangle, Bunsen burner, tripod stand	
	Able to list the following material and apparatus.	2
	<u>Sample answer</u> <u>Materials</u> Aluminium oxide , Copper(II) oxide , carbon <u>Apparatus</u> [Container], Bunsen burner, tripod stand	
Able to give any metal and any suitable container.	1	
<u>Sample answer</u> Carbon, aluminium oxide/copper(II) oxide , any suitable container, Bunsen burner		
	No response or wrong response	0

Questions	Mark Scheme	Mark
3(e)	Able to list all the steps correctly.	3
	<u>Sample answer</u> 1. [1-3] spatula of carbon powder and [1-3] spatula of [aluminium oxide] powder is put into a crucible. 2. The mixture is mixed. 3. The crucible is put on the tripod stand 4. The mixture is heat strongly. 5. Observation is recorded. 6. Step 1-5 is repeated by using carbon powder and [copper(II) oxide] powder.	
	Able to list down steps 1,4,6 less correctly.	2
	Able to list down steps 1 and 4 less correctly.	1
	No response or wrong response	0

Questions	Mark Scheme	Mark						
3(f)	<p>Able to tabulate the data with the following aspects</p> <ol style="list-style-type: none"> 1. Correct titles 2. Complete list of metals <p><u>Sampel answer</u></p> <table border="1" data-bbox="523 524 1096 712"> <thead> <tr> <th>Mixture//Campuran</th> <th>Observation</th> </tr> </thead> <tbody> <tr> <td>Carbon and [Aluminium oxide]</td> <td></td> </tr> <tr> <td>Carbon and [Copper(II) oxide]</td> <td></td> </tr> </tbody> </table>	Mixture//Campuran	Observation	Carbon and [Aluminium oxide]		Carbon and [Copper(II) oxide]		2
Mixture//Campuran	Observation							
Carbon and [Aluminium oxide]								
Carbon and [Copper(II) oxide]								
	<p>Able to tabulate the data but incomplete</p> <p><u>Sample answer</u></p> <table border="1" data-bbox="357 927 1260 1043"> <thead> <tr> <th>Mixture//Campuran</th> <th>// Observation</th> </tr> </thead> <tbody> <tr> <td>Carbon and [Aluminium oxide]</td> <td></td> </tr> <tr> <td>Carbon and [Copper(II) oxide]</td> <td></td> </tr> </tbody> </table>	Mixture//Campuran	// Observation	Carbon and [Aluminium oxide]		Carbon and [Copper(II) oxide]		1
Mixture//Campuran	// Observation							
Carbon and [Aluminium oxide]								
Carbon and [Copper(II) oxide]								
	No response or wrong response	0						