MODULE 1 PAPER 3 MARKING SCHEME

Q		ANSWER	SCORE
1	a	[able to measure diameter of dents accurately and correctly] Sample answer: Copper : 2.0, 2.1, 2.1 Brass : 1.9, 1.8, 1.9	3
		[able to measure diameter of dents without two decimal place]	2
		[able to state four diameter of dents correctly]	1
		No response or wrong response	0

Q		ANSWER	SCORE
1	b	[able to construct table with correct label and unit] Sample answer:	

Type of blocks	Diameter of dents (cm)			Average diameter of dents (cm)
	I	II	III	
Copper	2.00	2.10	2.10	2.06
Brass	1.90	1.80	1.90	1.87

3

[able to construct the table without correct label or unit]		2
[able to construct idea of table]		1
No response or wrong response		0

Q		ANSWER	SCORE
1	c	[able to state hypothesis correctly] Sample answer When brass is used, the diameter of dent is smaller // When copper is used, the diameter of dent is bigger	3
		[able to state hypothesis less correctly]	2
		[able to state idea of hypothesis]	1
		No response or wrong response	0

Q		ANSWER	SCORE
1	d	[able to state all the variables] Sample answer 1. Manipulated variable : type of materials / blocks// copper and brass 2. Responding variable : diameter / size of dents 3. Fixed variable : size / diameter and mass of steel ball bearing// height of the weight // mass of the weight	3

		[able to state any two variables correctly]	2
		[able to state any one variable correctly]	1
		No response or wrong response	0

Q		ANSWER	SCORE
1	e	[able to state operational definition correctly] Sample answer Smaller dent is produced when 1kg of weight is dropped on the block.	3
		[able to state operation definition less correctly] Sample answer Smaller dent is produced when weight is dropped on the block	2
		[able to state operation definition] Sample answer The harder block has a smaller dent	1
		No response or wrong response	0
1	f	[*able to state observation correctly]* *Sample answer* The average diameter of dent become smaller	3
		[able to state observation less correctly] *Sample answer* The dent become smaller	2
		[able to state idea of observation] Sample answer Small dent	

Q		ANSWER	SCORE
1	g	[*able to state inference correctly]* *Sample answer* Brass is the harder than copper	3
		[able to state inference less correctly]	2

Sample answer

Brass is the harder
[able to state idea of inference]
Sample answer

1

Brass is the hard // copper is soft
No response or wrong response 0

h [*able to state situation correctly]*
Sample answer

3

Iron bar rust , steel bar do not rust

[*able to state situation less correctly]*
Only 1 bar stated

2

[able to state idea of situation]

1

No response or wrong response 0

i *1.65 cm* 3
Antara 1.55 hingga 1.75 cm 2
Antara 1.45 hingga 1.55cm // 1.75 hingga 1.85 cm 1
Wrong responr // no respon 0

j *[able to classify all correctly]*

Alloy	*Pure metal*
Duralumin *Pewter*	*Tin* *Gold* *Manganese* *Magnesium*

3

[able to classify 5 correctly] 2
[able to classify 4 correctly] 1
Other respon 0

Question	Rubric	Score
3(a)	Able to give the statement of the problem correctly Sample answer : How does the temperature of sodium thiosulphate solution affect the rate of reaction?	3
	Able to give the statement of the problem incorrectly Sample answer : How does the temperature of solution affect the rate of reaction?	2
	Able to give an idea of statement of the problem Sample answer : To determine the rate of reaction by the temperature of solution	1
	No response or wrong response	0

Question	Rubric	Score
3(b)	Able to state **all** variables correctly Sample answer : Manipulated variable :The temperature of sodium thiosulphate solution Responding variable : Rate of reaction//The time taken for the 'X' mark to disappear Constant variable : Volume and concentration (sodium thiosulphate) / (hydrochloric acid) // sodium thiosulphate // acid// size of conical flask	3
	Able to state any **two** variables correctly	2
	Able to state any **one** variable correctly	1
	No response or wrong response	0

Question	Rubric	Score
3(c)	Able to state the relationship between the manipulated variable and the responding variable correctly Sample answer : The higher the temperature of sodium thiosulphate solution , the higher the rate of reaction	3
	Able to state the relationship between the manipulated variable and the responding variable incorrectly Sample answer : The rate of reaction increases when the temperature of solution increase	2
	Able to state an idea of hypothesis Sample answer : The temperature of reactant affect the rate of reaction	1
	No response or wrong response	0

Question	Rubric	Score

3(d)	Able to give the list of the apparatus and materials correctly and completely Answer: **Apparatus:** conical flask, measuring cylinder, thermometer, stopwatch, white paper, wire gauze, tripod stand, Bunsen bunner **Material:** [0.1 – 1.0] mol dm^{-3} sodium thiosulphate solution, [0.1-1.0] mol dm^{-3} hydrochloric acid	3
	Able to give the list of the apparatus and materials correctly but not completely Answer: **Apparatus:** conical flask, thermometer, stopwatch, white paper, Bunsen bunner **Material:** Sodium thiosulphate solution, hydrochloric acid	2
	Able to give **two** materials and at least **one** apparatus Sample answer : **Material:** Sodium thiosulphate solution, hydrochloric acid **Apparatus:** [container]	1
	No response or wrong response	0

Question	Rubric	Score
3(e)	Able to state **all** procedures correctly Sample answer : 1. **Draw** an X on a white paper. 2. **Pour** [20-100] cm^3 of [0.1 – 1.0] mol dm^{-3} sodium thiosulphate solution into a conical flask. 3. **Record** the temperature of solution. 4. **Place** the conical flask on the X. 5. **Pour** [5 – 10] cm^3 of [0.1 – 1.0] mol dm^{-3} hydrochloric acid solution. 6. **Swirl** the conical flask and start the stopwatch immediately. 7. **Stop** the stopwatch when the X is no longer visible. **Record** the time taken. 8. **Repeat** steps 2 to 7 using 35°C, 40°C, 45°C and 50°C temperature of sodium thiosulphate solution.	3

	Able to state **four** steps of procedures correctly Steps **2, 4, 5, 8**	2
	Able to state **two** steps of procedures correctly Steps **2, 5**	1
	No response or wrong response	0

Question	**Rubric**	**Score**
3(f)	Able to exhibit the tabulation of data that includes the following information. 1. Headings 2. With unit <u>Sample answer :</u> Temperature/ ^{o}C | Time/s 30 | 35 | 40 | 45 | 50 |	2
	Able to tabulate the data incompletely 1. Titles without unit <u>Sample answer :</u> Temperature | Time | |	1
	No response given / wrong response	0

END OF MARKING SCHEME