

Jabatan Pelajaran Negeri Pahang (JPNP) 2009

Answer Scheme

Trial Exam 2009 Physics Paper 1

<i>1</i>	C	<i>11</i>	B	<i>21</i>	A	<i>31</i>	D	<i>41</i>	C
<i>2</i>	A	<i>12</i>	D	<i>22</i>	D	<i>32</i>	C	<i>42</i>	D
<i>3</i>	D	<i>13</i>	A	<i>23</i>	C	<i>33</i>	A	<i>43</i>	A
<i>4</i>	A	<i>14</i>	D	<i>24</i>	A	<i>34</i>	B	<i>44</i>	C
<i>5</i>	D	<i>15</i>	B	<i>25</i>	B	<i>35</i>	B	<i>45</i>	A
<i>6</i>	C	<i>16</i>	D	<i>26</i>	C	<i>36</i>	A	<i>46</i>	A
<i>7</i>	C	<i>17</i>	C	<i>27</i>	B	<i>37</i>	B	<i>47</i>	C
<i>8</i>	A	<i>18</i>	D	<i>28</i>	B	<i>38</i>	D	<i>48</i>	C
<i>9</i>	B	<i>19</i>	C	<i>29</i>	B	<i>39</i>	C	<i>49</i>	D
<i>10</i>	C	<i>20</i>	C	<i>30</i>	D	<i>40</i>	D	<i>50</i>	D

PHYSICS Paper 2 (MARKING SCHEME)

- Trial Examination F5 2009 JPN Pahang.

Q1	Marking scheme	Marks
(a)	5 kPa	1
(b)(i)	Perpendicular to the scale of Bourdon Gauge	1
(ii)	165 kPa	1
(c)	increase	1
	TOTAL	4

Q2	EXPLANATION	MARKS
(a)	Tendency of object to remain at rest or moving with uniform velocity	1
(b)	Mass in 2.1(a)<2.1(b)	1
(c)	Inertia in 2.1(a)<2.1(b)	1
(d)	Inertia of crate to remain at rest	1
(e)	Shake bottle up and down, source comes out	1
	TOTAL	5

Q3	Marking scheme	Marks
(a)	Electromotive force // e.m.f.	1
(b)(i)	i- number of turns : 3.1 (a) < 3.1(b) ii-deflection of galvanometer : 3.1(a) < 3.1(b)	1 1
(ii)	- Rate of change of flux increase - Induce emf increases	1 1
(c)	Faradays' Law	1
	TOTAL	6

Q4	EXPLANATION	MARKS
(a)	2 V	2
(b)	Internal resistance//	2
(c)(i)	$R = V/I$ $= 1.5/0.3$ $= 5 \Omega$	2
(c)	$r = \frac{E-V}{I}$ $= \frac{2.0-1.5}{0.3}$ $= 1.67 \Omega$	1
(d)	$I = E/(R+r)$ $= 2.0/(2.5+1.67)$ $= 0.5 \text{ A}$ $V = E - IR$	
	TOTAL	7
Q5	EXPLANATION	MARKS
(a)	Measure mass of ice melted by heat from surrounding	1

(b)	168 g	
(c)	Latent Heat	2
(d)	$L = H/m$ $= 56800/0.168$ $= 338\,095\text{ Jkg}^{-1}$	1 1 1
(e)	Heat loss to surrounding	1
(f)	Wrap filter funnel with wool	1
TOTAL		8

Q6	Marking scheme	Marks
(a)	X: Microwave Y: Radio wave	1 1
(b) (i)	Wavelength X < wavelength Y	1
(b) (ii)	Frequency X > Frekuensi Y	1
(c) (i)	Radiowave , Microwave , Infrared ray	1
(c) (ii)	The same	1
(iii)	<ul style="list-style-type: none"> - Transfer energy - Transverse waves - Travel in vacuum 	1
TOTAL		8

Q7	Marking scheme	Marks
(a)	Rate of change of momentum	1
(b)	$F = m(v-u)/t$ $= 1.5 (20-0)/0.2$ $= 150\text{ N}$	1 1
(c)	1500 N	1
(d)	Time of impact 7.1(a) > 7.1(b)	1
(e)	Impulsive force 7.1(a) < 7.1(b)	1
(f)	Pain in 7.1(a) < in 7.1(b)	1
(g)	Time of impact increase, impulsive force decrease, pain decrease	1
(h)	Put on thick sock// wool sock	1
TOTAL		10
Q8	EXPLANATION	MARKS
(a)	Unstable isotope	1

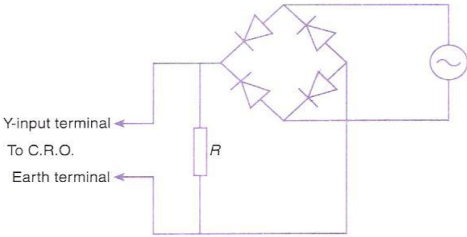
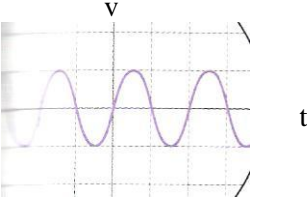
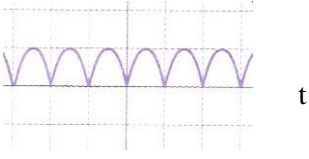
(b)	D : Reading of rate meter increase	2
(c)(i)	$^{226}_{88}\text{Ra} \longrightarrow ^{222}_{86}\text{Rn} = ^4_2\text{He}$	2
(c)(ii)	Sodium: $45/3=15$ hrs Cobalt 60: $15.9/3 = 5.3$ yrs Radium : $4860/3 = 1620$ yrs	4
(d)	Sodium 24 : short half life Emit beta, can penetrate soil	1 1 1
TOTAL		12

Q9	Marking scheme	Marks	
(a)	deflected	1	
(b)	-in 9(a) incident angle equal reflected angle	1	
	-incident angle 9(a) < 9(b)	1	
	-reflected angle9(a)< 9(b)	1	
	Relate : incident angle increase, reflected angle increase	1	
	Physics concept : incident angle = reflected angle	1	
	Name : Law of reflection		
(c)	Bottom edge of mirror from floor = 150 cm /2 = 75 cm	2	
	Height of mirror =160 cm /2 = 80 cm	2	
(d)	modification	explanation	10 (max)
	Device : periscope	Cheaper than CCTV	
	2 plane mirrors // 2 prisms	Reflect light from object	
	Mirrors are arranged Parallel	Light from first mirror will be reflected into second mirror	
		Light from second mirror is reflected into the observer’s eyes	
	Tube or casing to hold mirror	easier to handle periscope	
	Mirrors are at 45° angle		
	Diagram also accepted		

	TOTAL	20
--	--------------	-----------

Q10	EXPLANATION	MARKS														
(a)	Work done to transfer 1 C charges from one point to another	1														
(b)	<ul style="list-style-type: none">Electrical power is generated at high current and low voltageBefore transmission, current passes through step up transformerDuring transmission, electrical power is at low current and high voltage to reduce power lossAt reception point, current passes through step down transformerAt reception, electrical power is at low voltage and high current	5														
(c)	<ul style="list-style-type: none">Nonrenewable resources : natural gas, petroleum<ul style="list-style-type: none">: will be depleted: pollute the environmentRenewable resources : hidro, solar & wind<ul style="list-style-type: none">Will not be depleted: does not pollute environment	4(Max)														
(d) (i)	<table><thead><tr><th>Characteristic</th><th>Explanation</th></tr></thead><tbody><tr><td>Material: steel alloy</td><td>Strong, will not breake easily</td></tr><tr><td>U shape steel alloy</td><td>Not too heavy</td></tr><tr><td>Trust and support join</td><td>Can support bigger weight</td></tr><tr><td>Large diameter cable</td><td>Less resistance</td></tr><tr><td>made from small diameter and laminated wire</td><td>Reduce eddy current</td></tr><tr><td>Cable made from low density material</td><td>Cable is not heavy</td></tr></tbody></table> <p><i>*Accept any relevant answers</i></p>	Characteristic	Explanation	Material: steel alloy	Strong, will not breake easily	U shape steel alloy	Not too heavy	Trust and support join	Can support bigger weight	Large diameter cable	Less resistance	made from small diameter and laminated wire	Reduce eddy current	Cable made from low density material	Cable is not heavy	10 (max)
Characteristic	Explanation															
Material: steel alloy	Strong, will not breake easily															
U shape steel alloy	Not too heavy															
Trust and support join	Can support bigger weight															
Large diameter cable	Less resistance															
made from small diameter and laminated wire	Reduce eddy current															
Cable made from low density material	Cable is not heavy															
TOTAL		20														

Q11	Marking Scheme	Marks
11 (a)	Power is rate of work done	1
(b)	-low mass-more agile -high height-easy to shoot goal -responding time fast – easy to catch ball -power high(short time to move brick)-will not tire easily// more energy -small time to complete 100m run- can run fast Choose C: low mass, tall, respond fast, high power & can run fast	10
(c)	-runner has Inertia -to continue moving forward -the legs stop, body continue moving forward -Unstable and fall	1 1 1 1
(d)	Student 1 : power = mgh/t = $55 \times 10 \times 10 / 12$ = 458 W Student 2: power = $60 \times 10 \times 10 / 14$ = 428 W Student 1 has higher power	1 1 1 1 1
12(a)	-intrinsic semiconductor such as silicon atom -doped with pentavalent atom such as phosphorous - each pentavalent atom contribute one free electron	1 1
(b)	(i) Bulb 12.2 (ii) <ul style="list-style-type: none"> - Electron from n-type drift to p-n junction - Holes from p-type drift to p-n junction - At the junction electrons and holes combines to ensure continuous current flow. Bulb light up 	1 1 1 1
(c)	(i) Ratio $N_p: N_s = V_p:V_s$ = 240V:24V = 100 (to get 24 V output) (ii)type of core :Laminated soft iron core (reduce power loss due to eddy current in the core) (iii)full wave rectification: (less power loss & continuous current)	2 2 2
(d)(i)	Full wave rectification circuit diagram	2

	 <p>Y-input terminal To C.R.O. Earth terminal</p>  <p>Input signal – alternating current</p>  <p>Output signal – full wave rectification</p>	<p>1</p> <p>1</p>
(ii)	<p>Why</p> <ul style="list-style-type: none"> - To smoothen the current <p>How</p> <ul style="list-style-type: none"> - When current increases in circuit capacitor stores charges - When current decreases in the circuit capacitor discharges (supply charges to the circuit) - Make the current flow more stable 	<p>1</p> <p>1</p> <p>1</p>
	TOTAL	20

**4541/3
Kimia
Kertas 3
Peraturan
Pemarkahan
2009**

**PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA 2009**

KIMIA

KERTAS 3

PERATURAN PEMARKAHAN

UNTUK KEGUNAAN PEMERIKSA SAHAJA

AMARAN

Peraturan pemarkahan ini **SULIT** dan **Hak Cipta Jabatan Pelajaran Pahang**. Kegunaannya khusus untuk pemerikasa berkenaan sahaja

Peraturan Pemarkahan ini mengandungi 10 halaman bercetak

**MARKING SCHEME
TRIAL EXAM 2009**

Question Number	Rubric	Score
1 (a)	[able to state three observations for each of the experiment correctly,] Sample answer: 1. lithium moves slowly on the water surface. 2. sodium moves faster and randomly on the surface of the water with a hissing sound and ignites with a yellow flame. 3. potassium moves vigorously and randomly on the water surface and ignites with a lilac flame and produced 'pop' and 'hiss' sound	3
	[able to state two observations correctly]	2
	[able to state one observations correctly]	1
	No response or wrong response	0

Question Number	Rubric	Score
1 (b)	Able to state an inference correctly Sample answer: The solution produced is a strong alkali	3
	Able to state an inference less correctly Sample answer: The solution produced is an alkali	2
	Able to give idea for inference Sample answer: The metals dissolve in water	1
	No response or wrong response	0

Question Number	Rubric	Score
1(c)	Able to state the relationship accurately Sample answer: The lower the position of the metal in group 1 , the higher the reactivity of the metal towards water. // going down the group 1 the reactivity when react with water increases	3
	Able to state the relationship correctly but less accurate Sample answer: Different types of alkali metals, different reactivity of metals// Reactivity of metals depends on different types of alkali metals	2
	Able to state any idea of relationship Sample answer:	1

	Reactivity of metal depends on the position of metal// Potassium is the most reactive metal when react with water	
	No response or wrong response	0

Question Number	Rubric	Score
2(a)	Able to write all the pH value accurately Sample answer: $1.0 \text{ mol dm}^{-3} = 0.0$ $0.1 \text{ mol dm}^{-3} = 1.0$ $0.01 \text{ mol dm}^{-3} = 2.0$ $0.001 \text{ mol dm}^{-3} = 3.0$ $0.0001 \text{ mol dm}^{-3} = 4.0$	3
	Able to write at least 4 reading of pH value accurately	2
	Able to write at least 3 reading of the pH accurately	1
	No response or wrong response	0

Question Number	Rubric	Score												
2(b)	<p>Able to construct a table and record the data accurate and correctly contains the following information:</p> <ol style="list-style-type: none">1. Heading in the table: concentration,pH value2. transfer all pH value taken correctly, value of different concentration correctly3. concentration with unit <p>Sample answer :</p> <table><tr><th>Concentration of hydrochloric acid /mol dm⁻³</th><th>pH value</th></tr><tr><td>1.0</td><td>0.0</td></tr><tr><td>0.1</td><td>1.0</td></tr><tr><td>0.01</td><td>2.0</td></tr><tr><td>0.001</td><td>3.0</td></tr><tr><td>0.0001</td><td>4.0</td></tr></table>	Concentration of hydrochloric acid /mol dm ⁻³	pH value	1.0	0.0	0.1	1.0	0.01	2.0	0.001	3.0	0.0001	4.0	3
Concentration of hydrochloric acid /mol dm ⁻³	pH value													
1.0	0.0													
0.1	1.0													
0.01	2.0													
0.001	3.0													
0.0001	4.0													
	<p>Able to construct a table that contains the following information:</p> <ol style="list-style-type: none">1. Heading in the table: concentration,pH value2. transfer all pH value taken correctly, value of different concentration correctly3. concentration without unit	2												
	<p>Able to construct a table that contain at least one heading and 2 readings of concentration and their pH value correctly.</p>	1												
	<p>No response or wrong response</p>	0												

Question Number	Rubric	Score
2(c)	Able to state the operational definition for strong acid accurately. Sample answer:	3

	An acid that has the lower pH value that ionise completely in water to produce high concentration of hydrogen ion.	
	Able to state the definition for strong acid Sample answer: acid that ionise completely and produce high concentration of hydrogen ion.	2
	Able to state an idea of acid Acid has a sour taste	1
	No response or wrong response	0

Question Number	Rubric	Score
2(d)	Able to state three variables accurately Sample answer: Manipulated variable: concentration of acid Responding variable: pH value Controlled variable: type of acid used/hydrochloric solution, //volume of acid	3
	Able to state two variables accurately	2
	Able to state one variable accurately or any two uncomplete variables	1
	No response or wrong response	0
Question Number	Rubric	Score
2(e)	Able to state the hypothesis correctly Sample answer: The higher/lower the concentration of hydrogen ions, H^+ , the lower/higher the pH value	3
	Able to state inference less accurate If concentration of acid increase/decrease, the pH value high/low //concentration of hydrogen ion is inversely proportional to the pH value	2
	Able to give idea of hypothesis concentration of hydrogen ion influence pH value	1
	No response or wrong response	0

Question Number	Rubric	Score				
2(f)	<p>Able to classify all the ions in acid into anion and cation correctly</p> <p>Sample answer:</p> <table><tr><td>anion</td><td>cation</td></tr><tr><td>chloride ion(Cl⁻), hydroxide ion(OH⁻)</td><td>hydrogen ion (H⁺)</td></tr></table> <p>or</p> <p>Anion- chloride ion(Cl⁻),hydroxide ion(OH⁻) Cation- hydrogen ion (H⁺)</p>	anion	cation	chloride ion(Cl ⁻), hydroxide ion(OH ⁻)	hydrogen ion (H ⁺)	3
anion	cation					
chloride ion(Cl ⁻), hydroxide ion(OH ⁻)	hydrogen ion (H ⁺)					
	<p>Able to classify at least one anion and cation correctly</p> <p>Sample answer:</p>	2				

	<table><tr><td>anion</td><td>cation</td></tr><tr><td>chloride ion(Cl⁻) / hydroxide ion(OH⁻)</td><td>hydrogen ion (H⁺)</td></tr></table>	anion	cation	chloride ion(Cl ⁻) / hydroxide ion(OH ⁻)	hydrogen ion (H ⁺)	
anion	cation					
chloride ion(Cl ⁻) / hydroxide ion(OH ⁻)	hydrogen ion (H ⁺)					
	or Anion- chloride ion(Cl ⁻) / hydroxide ion(OH ⁻) Cation- hydrogen ion (H ⁺)					
	Able to classify anion and cation correctly but in opposite group: Sample answer <table><tr><td>cation</td><td>anion</td></tr><tr><td>chloride ion(Cl⁻), hydroxide ion(OH⁻)</td><td>hydrogen ion (H⁺)</td></tr></table> Or cation- chloride ion(Cl ⁻) , hydroxide ion(OH ⁻) anion- hydrogen ion (H ⁺)	cation	anion	chloride ion(Cl ⁻), hydroxide ion(OH ⁻)	hydrogen ion (H ⁺)	1
cation	anion					
chloride ion(Cl ⁻), hydroxide ion(OH ⁻)	hydrogen ion (H ⁺)					
	No response or wrong response	0				

Question Number	Rubric	Score
2(g)	Able to calculate the number of mole correctly by showing a correct step of calculation and the correct answer with unit Sample answer: : $\frac{0.01 \times 50}{1000}$: 0.0005 mol	3
	Able to show a correct step of calculation and the correct answer without unit Sample answer: : $\frac{0.01 \times 50}{1000}$: 0.0005	2
	Able to show either one step of calculation or the answer without unit Sample answer: : $\frac{0.01 \times 50}{1000}$ // : 0.005	1
	No response or wrong response	0

Question Number	Rubric	Score
2 (h)	Able to predict pH value of 0.01 mol dm ⁻³ ethanoic acid correctly Sample answer: $4 \leq \text{pH value} \leq 5$	3
	Able to predict pH value of 0.01 mol dm ⁻³ ethanoic acid less accurately	2

	Sample answer: > 5 and ≤ 6.9	
	Able to state an idea oh pH value Sample answer: Any value between 1 and 14	1
	No response or wrong response	0

Question Number	Rubric	Score
3 (a)	Able to give statement of problem correctly Sample answer: Does the smaller pieces of marble chips increase the rate of reaction?// How does the total surface of reactants affect the rate of reaction?	3
	Able to give statement of problem less correctly Sample answer: Does the size of marble chips increase the rate of reaction?// To study the particle size and the rate of reaction.	2
	Able to give an idea about the statement of problem Sample answer: The size of marble chips influences the rate of reaction?	1
	No response or wrong response	0

Question Number	Rubric	Score
3(b)	Able to state all variables correctly Sample answer: Manipulated variable: size of marble chips (calcium carbonate/total surface area of marble chips (calcium carbonate) Responding variable: rate of reaction Controlled variable: concentration and volume of hydrochloric acid, mass of marble chips	3
	Able to state any two of the variables above correctly	2
	Able to state any one of the variables above correctly	1
	No response or wrong response	0

Question Number	Rubric	Score
3(c)	Able to state the relationship correctly between the manipulated variable and the responding variable	3

	<u>Sample answer</u> When the total surface area marble chips /reactants increases/decrease the rate of reaction increase/decrease// when the size of marble chips increase the rate of reaction decrease	
	Able to state the relationship between the manipulated variable and the responding variable <u>Sample answer</u> The rate of reaction increases when the total surface area increase// the rate of reaction increases when the size of particle decreases// the rate of reaction depends on the total surface area/size of reactant/particles	2
	Able to state the idea of hypothesis <u>Sample answer</u> Different size gives different rate of reaction	1
	No response or wrong response	0

Question Number	Rubric	Score
3(d)	Able to give list of substance and apparatus correctly and completely Sample answer: Substances: [named]acid [with suitable concentration] Name of calcium carbonate[with suitable mass][2 sizes],water Apparatus: Stopwatch,conical flask,stopper and delivery tube,basin,burette,measuring cylinder,named weighing machine	3
	Able to give list of substances and apparatus correctly but not complete Sample answer Substance: [named] acid without mention the concentration ,calcium carbonate without different size,water Apparatus: Stopwatch,conical flask,measuring cylinder	2
	Able to give an idea about the list of substances and apparatus Sample answer: Substance : Any acid, marble chips Apparatus: Stopwatch, any suitable container	1
	No response or wrong response	0

Question Number	Rubric	Score
-----------------	--------	-------

3 (e)	<p>Able to state all procedures correctly</p> <p>Sample answer:</p> <ol style="list-style-type: none"> 1. (1-5) g of granulated calcium carbonate chips is weighed and place them in a conical flask 2. 10-50 cm³ [any acid] (0.1-2.0)mol dm⁻³ is pour into the conical flask 3. stopper the flask with a stopper that carries a delivery tube into a basin of water. 4. start the stop watch 5.collect the gas using a inverted burette 6.read and record the burette reading after fixed interval of time 7. experiment is stopped when the burette readings remains unchanged 8. Repeat step 1 to 7 by substituting granulated calcium carbonate with powder. 	3
	<p>Able to state all procedures but less accurate</p> <p>Sample answer:</p> <p>Contains step 1,2,4,6 and 7</p>	2
	<p>Able to state an idea about how to carry out the experiment</p> <p>Sample answer :</p> <p>Contains step 1,2 and 3</p>	1
	No response or wrong response	0

Question Number	Rubric	Score																														
3 (f)	<p>Able to show the suitable and complete tabulation of data with th following aspects</p> <ol style="list-style-type: none">1. 2 split table of 3 rows and 5 column2. correct titles of time,burette reading and volume of gas collected3. with unit <p>sample answer:</p> <p>Exp 1 : Calcium carbonate chips</p> <table><tr><td>Time/s</td><td>0</td><td>30</td><td>90</td><td>120</td><td>150</td></tr><tr><td>Burette reading/cm³</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Volume of gas/cm³</td><td></td><td></td><td></td><td></td><td></td></tr></table> <p>Exp 1 : Calcium carbonate powder</p> <table><tr><td>Time/s</td><td>0</td><td>30</td><td>90</td><td>120</td><td>150</td></tr><tr><td>Burette reading/cm³</td><td></td><td></td><td></td><td></td><td></td></tr></table>	Time/s	0	30	90	120	150	Burette reading/cm ³						Volume of gas/cm ³						Time/s	0	30	90	120	150	Burette reading/cm ³						2
Time/s	0	30	90	120	150																											
Burette reading/cm ³																																
Volume of gas/cm ³																																
Time/s	0	30	90	120	150																											
Burette reading/cm ³																																

	Volume of gas/cm ³						
	Able to construct a table with at least 1. one title 2. incomplete list of elements						1
	No response or wrong response						0