黎 sir 教室 A Lai Learning Center
HKDSE / IB Diploma / GCE AS AL / AP / SAT / HSC
IGCSE / GCSE / IB MYP / KS3 / MO / F.1 - F.6 / Y9 - Y13

# 2015 HKDSE PHYSICS Paper 1A

# Suggested Solutions

## Prepared by Andy Lai

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# 2015 HKDSE Physics Paper 1A Suggested Answers

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|---|---|---|---|---|---|---|---|---|---|
| 1. | C | 2. | C | 3. | A | 4. | A | 5. | C |
| 6. | B | 7. | B | 8. | B | 9. | D | 10. | D |
| 11. | B | 12. | A | 13. | A | 14. | D | 15. | B |
| 16. | D | 17. | A | 18. | D | 19. | C | 20. | A |
| 21. | B | 22. | D | 23. | A | 24. | B | 25. | C |
| 26. | D | 27. | C | 28. | C | 29. | D | 30. | C |
| 31. | A | 32. | A | 33. | D | | | | |

**Section A**

**1.** **C**

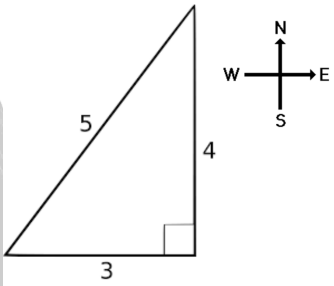
**黎 Sir 提提你 :**

- **Key word: Turn off engine, under the sun, two hours later, inside of the car far hotter than outside**
- **To explain why "inside the car is hotter outside", the only explanation is the glass windows of the car trap infra-red radiation because infrared radiation cannot pass through the glass, a small greenhouse effect results.**
- **The remaining heat of the engine will not contribute so much heat to the insider of the car.**
- **Although air is poor conductor of heat, but it also affect the rate of heat transfer from the surrounding to the insider of the car as well as the rate of heat transfer from the insider to the surrounding. Therefore, it should not be a good explanation to the said problem.**
- **The key of this question is the temperature of the inside of the car is hotter than outside, so the fact that metal parts absorb infra-red radiation at a faster rate than the surroundings is not a good explanation to the said problem.**

**2.** **C**

**黎 Sir 提提你 :**

- **By** $Pt = mc(\Delta T) \Rightarrow$ **Gradient** $= \frac{\Delta T}{t} = \frac{P}{mc}$
- **Same heater** $\Rightarrow$ **Same Power**
- **Same material** $\Rightarrow$ **Same specific heat capacity**
- **Therefore, Gradient** $= \frac{\Delta T}{t} \ \alpha \ \frac{1}{m}$
- $\frac{1}{m_x} : \frac{1}{m_y} = \frac{60-20}{t} : \frac{60-40}{t} \Rightarrow m_x : m_y = 1:2$

| | | |
|---|---|---|
| 3. | A | **黎 Sir 提提你 :**<br>**1. Heat: A process of energy transfer form hotter object to colder object until the temperature of them are the same.**<br>**⇒ P must have higher temperature since heat flow from P to Q.**<br>**⇒ Therefore, Option 1 is true.**<br>**2. Internal Energy: ∑ Kinetic Energy + ∑ Potential Energy**<br>**⇒ ↑ $\overline{K.E.}$ ⇔ ↑ Temperature while ↑ $\overline{P.E.}$ ⇔ Change States**<br>**⇒ Therefore, Internal Energy depends on Mass, Temperature and State**<br>**⇒ Higher in temperature ≠ Higher internal energy**<br>**⇒ Therefore, Option 2 is not necessarily true.**<br>**3. Specific Heat Capacity: The amount of energy required to change the temperature in 1 kg of the substance by 1 $^0$C.**<br>**⇒ Specific Heat Capacity depends on state and materials, not temperature**<br>**⇒ Therefore, Option 3 is not necessarily true.** |
| 4. | A | **黎 Sir 提提你 :**<br>● **By Pyth. theorem,**<br>**The displacement = $\sqrt{3^2+4^2}=5$**<br>● **By Average velocity = $\frac{5}{1.5+1}=2$ m s$^{-1}$**<br>  |

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| **5.** | **C** | **黎 Sir 提提你 :**<br>● **By Newton's 2nd Law:** $F_{net} = ma$<br>● $F = m_1 a_1$ **and** $F = m_2 a_2 \Rightarrow m_1 = \frac{F}{a_1}$ **and** $m_2 = \frac{F}{a_2}$<br>● $F = (m_1 + m_2)a \Rightarrow F = (\frac{F}{a_1} + \frac{F}{a_2})a \Rightarrow 1 = (\frac{1}{a_1} + \frac{1}{a_2})a \Rightarrow a = \frac{a_1 a_2}{a_1 + a_2}$ |

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| **6.** | **B** | **黎 Sir 提提你 :**<br>● **Given F-t graph, Impulse = Change in momentum = Area under the curve.**<br>● $Area\ of\ triangle = mv - mu \Rightarrow \frac{3 \times 10}{2} = 3v - 3(0) \Rightarrow v = 5$ **m s$^{-1}$** |

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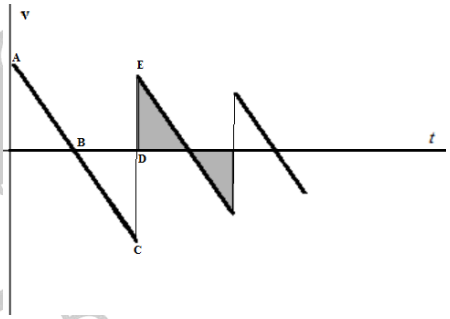
| 7. | B | 黎 Sir 提提你 :<br>● Take upward as positive.<br>● Point A: Bouncing up from ground.<br>● A to B: Going up with constant deceleration.<br>● Point B: Momentarily at rest at the maximum point.<br>● B to C: Going down with constant acceleration.<br>● Point C: Colliding the ground.<br>● Point D: Momentarily at rest during changing direction at the collision on the ground.<br>● Point E: Bouncing up from the ground after 1st collision back to the ground.<br>● The reason why the peak is getting smaller and smaller after successive collisions is that there is inelastic collision and some energy lost to the ground as internal energy, i.e. heat and sound energy. |



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| 8. | B | 黎 Sir 提提你 :<br>● Key words: Falls from P to Q, air resistance increases with the speed of the car.<br><br>1. Net force = Weight – Air resistance<br>⇒ ∵ Air resistance↑ as speed↑ but the weight remains unchanged<br>⇒ Net Force↓<br>⇒ Therefore, option 1 is wrong.<br><br>2. Net force = Weight – Air resistance = Mass x acceleration<br>⇒ ∵ Air resistance↑ as speed↑ but the weight remains unchanged<br>⇒ Net Force↓ but mass remains unchanged<br>⇒ Magnitude of acceleration↓<br>⇒ Therefore, option 2 is correct.<br><br>3. By Law of Conservation of Energy,<br>⇒ ↓G.P.E. = ↑K.E. + Work done against friction<br>⇒ Therefore, option 3 is wrong. |
| 9. | D | 黎 Sir 提提你 :<br>1. The velocity is always positive<br>⇒ The direction of the motion is always in the same direction.<br>⇒ Therefore, option 1 is correct.<br><br>2. The difference between area under curve P and curve Q = Separation between P and Q.<br>⇒ At t = $t_1$, the difference between area under curve P and curve Q is maximum<br>⇒ The separation between P and Q is the maximum<br>⇒ Therefore, option 2 is correct.<br><br>3. At time t = $t_2$, the area under curve P > area under curve Q.<br>⇒ Q stills lags behind P<br>⇒ Therefore, option 3 is correct. |

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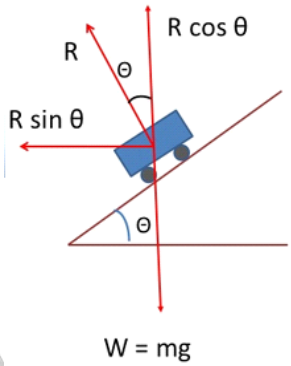
| **10.** | **D** | **黎 Sir 提提你 :**<br>● **Vertical Direction:** $R\cos\theta = mg \cdots (1)$<br>● **Horizontal Direction:** $R\sin\theta = \frac{mv^2}{r} \cdots (2)$<br>● **By (1),** $R = \frac{mg}{\cos\theta} \cdots (3)$<br>● **Therefore, The centripetal force**<br>= $(\frac{mg}{\cos\theta})\sin\theta = \frac{mg\sin\theta}{\cos\theta}$<br>  |

q

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| **11.** | **B** | **黎 Sir 提提你 :**<br>● **By Newton's 3rd law,** $F_{A\ on\ B} = F_{B\ on\ A}$**, Action-and-reaction pair,**<br>**equal in magnitude, opposite in direction, between two bodies only.**<br>● **Therefore, Option B is the answer.** |

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| **12.** | **A** | **黎 Sir 提提你 :**<br>**1. From figure (a) and figure (c), Period = 0.1 s is possible since the particles in figure (c) are the same as that in figure (a)** $\Rightarrow$ **Frequency =** $\frac{1}{0.1} = 10$ **Hz.**<br>$\Rightarrow$ **Therefore, Option 1 is possible.**<br>**2. If the frequency = 20 Hz** $\Rightarrow$ **Period =** $\frac{1}{20} = 0.05$ **s which is impossible since the particles in figure (c) are not the same as that in figure (b).**<br>$\Rightarrow$ **Therefore, Option 2 is possible.**<br>**3. If the frequency = 40 Hz** $\Rightarrow$ **Period =** $\frac{1}{40} = 0.025$ **s which is impossible since the 0.05/0.025 = 2** $\Rightarrow$ **which contradicts 0.05s is not the multiple of period.**<br>$\Rightarrow$ **Therefore, Option 3 is not possible.** |

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| 13. | A | 黎 Sir 提提你 :<br>1. Same period ⇒ Same frequency<br>⇒ Therefore, option 1 is correct.<br><br>2. P and Q are not vibrating in opposite direction all the time, only some time.<br>⇒ P and Q are only not in-phase, not antiphase.<br>⇒ Therefore, option 2 is wrong.<br><br>3. The displacement of the resultant wave at the point where P and Q meet is<br>⇒ -3(0), +1(1), +3(2), -1(3), -3(4), +1(5), +3(6), -1(7), -3(8), … displacement(time)<br>⇒ Therefore, option 3 is wrong. |

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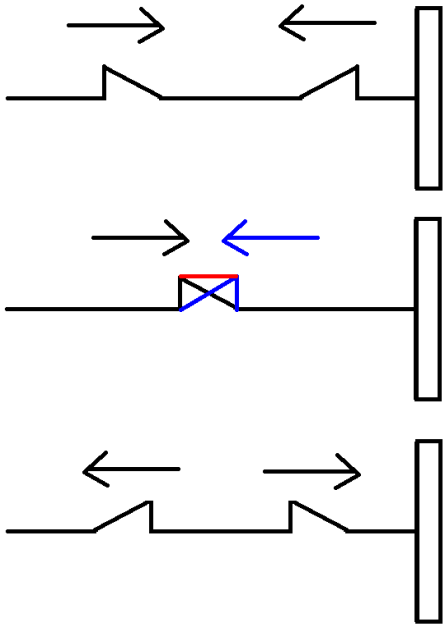
| 14. | D | 黎 Sir 提提你 :<br>● Less dense to Dense ⇒ 180 degrees phase change!<br>⇒ The 1st travelling pulse is inverted but the reflected pulse is upright.<br><br>● The 1st travelling pulse is reflected on the top and the 2nd travelling pulse is still going to the right, two pulses not yet superimpose.<br><br>2. When two pulses superimpose each other, the resultant displacement is the vector sum. (the horizontal red line) Therefore, option 3 is correct.<br><br>3. After two pulses pass though each other, two pulses remain same shape. Therefore, option 2 is correct.<br><br>  |

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| **15.** | **B** | **黎 Sir 提提你 :**<br>● **Light ray coming from the head of the arrow**<br>⇒ **Light ray will pass though the head of the arrow, not the foot of the arrow!**<br>● **Remarks: I think this is the easiest question in this exam paper!** |
| **16.** | **D** | **黎 Sir 提提你 :**<br>● **By Lens' formula,** $\frac{1}{u}+\frac{1}{v}=\frac{1}{f}$ **and f is positive for convex lens.**<br>● **Rearrange the formula,** $\frac{1}{v}=-\frac{1}{u}+\frac{1}{f}$.<br>● **Compared with** $y=mx+c$, **y:** $\frac{1}{v}$, **m: -1, x:** $\frac{1}{u}$ **and c:** $\frac{1}{f}>0$<br>● **Convex lens with longer focal length** ⇒ $\frac{1}{f}\downarrow$ ⇒ **y-intercept is smaller!**<br>● **Convex lens with longer focal length** ⇒ **Slope = -1 (Nothing to do with f!)**<br>● **Therefore, the dotted line is a parallel line with smaller y-intercept, i.e. a dotted line parallel to and under the solid line.** |

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| **17.** | **A** | **黎 Sir 提提你 :**<br>● **Speed of different colours of light in air is the same.**<br>● **Speed of different colours of light in glass is different but all of them are slower than that in air.**<br>● **Speed of red light in glass > Speed of violet light in glass**<br>● **By Snell's Law,** $\frac{v_{air}}{v_{glass}} = \frac{\sin\theta_{air}}{\sin\theta_{glass}} = \frac{n_{glass}}{n_{air}}$ **i.e.** $v \uparrow \Rightarrow \theta \uparrow \Rightarrow n \downarrow$<br>● **Therefore, Red light bends less towards the normal than the violet light when white light travels from air to glass because the difference between the speed of red light in air and glass is less than that of violet light in air and glass!** $\Rightarrow$ **Therefore, option (1) is correct and option (2) is wrong.**<br>● **By** $d\sin\theta = n\lambda$ **and given d is fixed and n = 1,** $\lambda_{red} > \lambda_{violet} \Rightarrow \theta_{red} > \theta_{violet}$<br>$\Rightarrow$ **Therefore, option (3) is correct and option (4) is wrong.** |

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| 18. | D | 黎 Sir 提提你 :<br>● Speed of mechanical wave ⇔ Medium of travel<br>● Speed of transverse waves along stretched string or spring: $c = \sqrt{\frac{T}{\mu}}$ where<br>T: Tension in the string, $\mu$ : Mass per unit length (For reference only)<br>● ↑ Tension of the string / spring<br>⇒ ↑ Length of the string / spring (Hook's law, $F = -kx$)<br>⇒ ↓ Mass per unit length!<br>⇒ ↑↑ Speed of the stretched string!<br>● In the question, ↑ Weight ⇒ ↑ Tension ⇒ ↑ Speed<br>● By wave equation $v = f\lambda$, ↑ v but f is fixed ⇒ ↑ $\lambda$<br>● For stationary wave ⇒ Nodes at both fixed end!<br>● Therefore, ↑ $\lambda$ and Nodes at both end ⇒ Option D is the answer!<br>Remarks:<br>● Although $c = \sqrt{\frac{T}{\mu}}$ is out of syllabus, but I highly recommend you to remember it because it is easy for you to remember that increase in tension or decrease in mass per unit length (for example, thinner string) will increase the speed of wave in the medium, vice versa. |

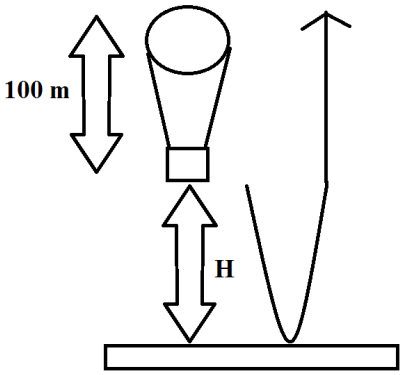
**19.** **C**

黎 Sir 提提你 :

- **Speed = Distance / Time**

⇒ **340 = (H + H + 100) / 5**

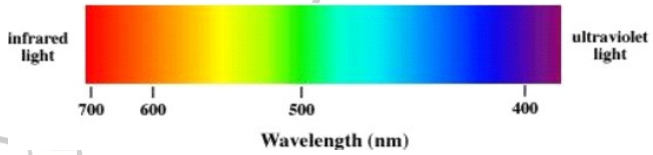
⇒ **H = 800 m**




- **Remarks: This kind of question about constant speed of wave is popular in recent public exam. The difficulty of this question is easy level among others in past years!**

**20.** **A**

黎 Sir 提提你 :




- **Part of EM spectrum:**

- **Range of wavelength of visible light: 400 nm (Violet) to 700 nm (Red)**

⇒ **Order of magnitude of visible light** $\approx 10^{-7}$ **m**

⇒ **Order of magnitude of UV radiation >** $10^{-7}$ **m** $\approx 10^{-8}$ **m**

- **Range of wavelength of visible light: 400 nm (Violet) to 700 nm (Red)**

⇒ **Order of magnitude of visible light** $\approx 10^{-7}$ **m**

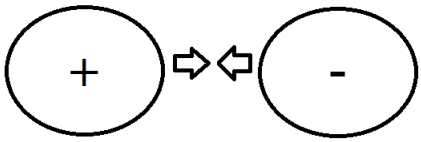
⇒ **Order of magnitude of microwave radiation <** $10^{-7}$ **m** $\approx 10^{-2}$ **m (few cm)**

- **By choosing the best answer ⇒ Option A is the answer!**

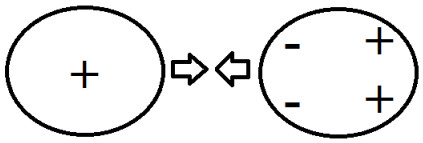
**21.** **B**

**黎 Sir 提提你 :**

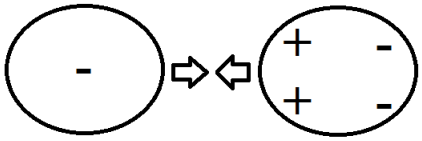
- **Unlike charges attract!**




- **Charged and Neutral attract! (Induced Charges!)**



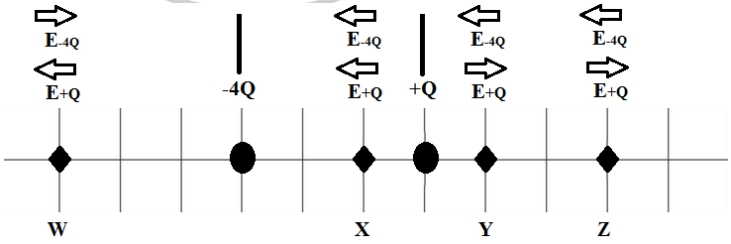

- **Therefore, option B is the answer.**




**22.** **D**

**黎 Sir 提提你 :**

- **The direction of E-field due to +Q and –Q are shown below:**




⇒ **Therefore, Only resultant E-field at point W, Y and Z may be cancelled**

- **Resultant E-field at W =** $\frac{1}{4\pi\varepsilon_o}\frac{-4Q}{3^2}+\frac{1}{4\pi\varepsilon_o}\frac{+Q}{6^2}=-\frac{1}{4\pi\varepsilon_o}\frac{15Q}{36}\neq 0$
- **Resultant E-field at Y =** $\frac{1}{4\pi\varepsilon_o}\frac{-4Q}{4^2}+\frac{1}{4\pi\varepsilon_o}\frac{+Q}{1^2}=+\frac{1}{4\pi\varepsilon_o}\frac{3Q}{4}\neq 0$
- **Resultant E-field at Z =** $\frac{1}{4\pi\varepsilon_o}\frac{-4Q}{6^2}+\frac{1}{4\pi\varepsilon_o}\frac{+Q}{3^2}=0$

⇒ **Therefore, the answer is D.**

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| **23.** | **A** | **黎 Sir 提提你 :**<br>● **By** $E.P.E. = qV = \frac{1}{4\pi\varepsilon_o}\frac{Qq}{r}$ **and scalar sum of electric potential energy.**<br>● $E.P.E. = qV = \frac{1}{4\pi\varepsilon_o}\frac{(+Q)(+Q)}{r} + \frac{1}{4\pi\varepsilon_o}\frac{(-Q)(+Q)}{r} = 0\ J$ |

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| **24.** | **B** | **黎 Sir 提提你 :**<br>● **When the coil is made to rotate steadily about its axis XY in a uniform magnetic field as shown in the figure in the question paper**<br>⇒ **By Lenz' law, the increase in magnetic field from left to right will induce a current flowing clockwise to induce a magnetic field from right to left to oppose the change causing the motion.**<br>⇒ **Therefore, option B is wrong.**<br><br>● **When current flowing upward through wire P**<br>⇒ **By Fleming's left hand rule, there is a magnetic force acing on wire P into paper while that acting on Q out of paper.** |

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| 25. | C | 黎 Sir 提提你 :<br>● When the driver seat is occupied<br>⇒ Switch S1 is closed and the bulb light up<br>⇒ Therefore, switch S1, the bulb should be connected in-series.<br><br>● When the seat belt is not fasten<br>⇒ Switch S2 is closed but the bulb keep lighting up<br>⇒ Therefore, switch S2, the bulb should be connected in-parallel.<br><br>● However, when both the driver seat is occupied and the seat belt is fasten<br>⇒ The branch consisting the light bulb is short-circuited by the branch consisting the switch and the current become infinite large!<br>⇒ Therefore, a resistor should be connected in-series with the battery and light bulb, switch 1 and switch 2.<br>⇒ Therefore, option C is the answer. |

**26.** **D**

**黎 Sir 提提你 :**

- **Let voltage across the internal resistor is Vr.**

- **Because it is a multiple choice question, for simplified calculation, we can assume all of the value of the internal resistance, R1, R2 and R3 be 1 ohm and the e.m.f. of the battery is 10 V**

- **If every components work properly, the ammeter reading,** $I_1$

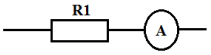
$$\Rightarrow I_1 = \frac{E - V_r}{R_1} = \frac{E - E(\frac{r}{r + R_1 // (R_2 + R_3)})}{R_1} = \frac{10 - 10(\frac{1}{1 + 1 // (2)})}{1} = 4\ A$$

- **If every components work properly, the voltmeter reading,** $V$

$$\Rightarrow V = (E - V_r) \times \frac{R_2}{R_2 + R_3} = (E - E(\frac{r}{r + R_1 // (R_2 + R_3)})) \times \frac{R_2}{R_2 + R_3}$$

$$= (10 - 10(\frac{1}{1 + 1 // (1 + 1)})) \times \frac{1}{1 + 1} = 2\ V$$

- **If the resistor R2 is faulty and become open circuit**




⇒ **The voltmeter is measuring the potential different between**

⇒ **The voltmeter reading, V, now is**

$$\Rightarrow V = E - V_r = E - E(\frac{r}{r + R_1}) = 10 - 10(\frac{1}{1 + 1}) = 5\ V$$

⇒ **Therefore, the reading of voltmeter increases.**

- **If the resistor R2 is faulty and become open circuit**

⇒ **The ammeter reading, I, now is**

$$\Rightarrow I = \frac{E - V_r}{R_1} = \frac{E - E(\frac{r}{r + R_1})}{R_1} = \frac{10 - 10(\frac{1}{1 + 1})}{1} = 5\ A$$

⇒ **Therefore, the reading of ammeter increases**

- **Therefore, option D is the answer.**

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| **27.** | **C** | **黎 Sir 提提你 :**<br>● **By I = nevA**<br>$\Rightarrow 0.5 = \frac{(10^{22})(1.6\times10^{-19})v(A)}{V}$<br>$\Rightarrow 0.5 = \frac{(10^{22})(1.6\times10^{-19})v(A)}{Al}$<br>$\Rightarrow 0.5 = \frac{(10^{22})(1.6\times10^{-19})v}{(1)}$<br>$\Rightarrow v = 3.1\times10^{-4}\ m\ s^{-1}$ |

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| **28.** | **C** | **黎 Sir 提提你 :**<br>● **Parallel circuit advantages: Switch on/off independently, fixed voltage supply and so operating at rated value, one appliance break down others still work.**<br>● **Ring main circuit advantages: Thinner cables carrying large current since the current is carried by 2 separate path.**<br>● **However, the current supply is fixed and cannot be reduced since the input power and voltage are fixed.**<br>● **Therefore, option C is the answer.** |

**29.** **D**

**黎 Sir 提提你 :**

- **By** $P=\frac{V^2}{R}$ $\Rightarrow$ **Given P and R is fixed** $\Rightarrow$ **Halve V** $\Rightarrow$ $V^2\times\frac{1}{4}$ $\Rightarrow$ $P\times\frac{1}{4}$
- **Since the voltage supply in Hong Kong is 220 V while the voltage supply in Hong Kong is only 110 V** $\Rightarrow$ **Power supply in Japan is only a quarter of that in Hong Kong** $\Rightarrow$ **Less power and so longer time to heat up the iron.**
- **Therefore, the answer is option D.**

**Remarks :**

- **I have an experiences about this concept when I traveled in Japan before. I took a electric tea pot rated at 220 V and plug it in the socket in a hotel in Japan. It takes over half an hour to boil a small pot of water. It's fun! Who says Physics is useless in daily life? Wakaka…**

**30.** **C**

**黎 Sir 提提你 :**

- **By** $V_H=\frac{BI}{net}$ $\Rightarrow$ $V_H=\frac{(B)(\frac{V}{R})}{net}$ $\Rightarrow$ $V_H=\frac{(B)(\frac{V}{\frac{\rho l}{A}})}{net}$ $\Rightarrow$ $V_H=\frac{BAV}{(\rho l)(net)}$
- **By t x 0.5, b x 0.5** $\Rightarrow$ **A x 0.25**
- **Therefore,** $V_H=\frac{BAV}{(\rho l)(net)}$ $\Rightarrow$ $V_H\times\frac{0.25}{0.5}$ $\Rightarrow$ $V_H\times\frac{1}{2}$
- **Therefore, Current,** $I=\frac{V}{R}=\frac{VA}{\rho l}$ $\Rightarrow$ $I\times 0.25$ $\Rightarrow$ $I\times\frac{1}{4}$
- **Therefore, option C is the answer.**

**31.** **A**

**黎 Sir 提提你 :**

- **Spontaneous means the reaction is unaffected by environmental factors such as pressure, temperature or chemical reaction, etc. or there is no way to stimulate or inhibit the decay as it just happens by itself.**

- **Radioactive decay is random and spontaneous in nature**

**1.** $^{24}_{11}Na \rightarrow ^{24}_{12}Mg + ^{0}_{-1}e$ **is a beta (minus) decay** $\Rightarrow$ **Therefore, Spontaneous**

**2.** $^{10}_{5}B + ^{1}_{0}n \rightarrow ^{7}_{3}Li + ^{4}_{2}He$ **is a neutron capture process**

$\Rightarrow$ **The neutron can be slow down by artificial process like moderator to increase the rate of reaction.**

$\Rightarrow$ **Therefore, not spontaneous!**

**3.** $^{2}_{1}H + ^{3}_{1}H \rightarrow ^{4}_{2}He + ^{4}_{2}He$ **is nuclear fusion**

$\Rightarrow$ **The nuclear fusion occurring in Sun Core spontaneously. It is because the temperature of the Sun core is high enough to start and continue the reaction.**

$\Rightarrow$ **However, the rate of fusion occurring in the Earth can be controlled by the temperature, for example, hydrogen bomb!**

$\Rightarrow$ **Therefore, this choice is controversial!**

- **However, since option 1 must be true and there is no choice of both option 1 and option 3 to be true.**

$\Rightarrow$ **Therefore, the answer can be option (1) only.**

**Remarks:**

- **Random means that for a large number of nuclei, it is impossible to predict which nuclei are going to decay at a particular moment or for a certain time interval, the probability of decay of any nuclei is the same.**

- **Dealing with multiple choices questions, Remember the rule of thumb: Choose the best answer!**

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| **32.** | **A** | **黎 Sir 提提你 :**<br>● **Alpha particles have short range in air**<br>⇒ **Therefore, topic A is correct.** |

| | | |
|---|---|---|
| **33.** | **D** | **黎 Sir 提提你 :**<br>**By** $k = \frac{\ln 2}{t_{1/2}}$ **and** $N = N_o e^{-kt}$<br>⇒ $k = \frac{\ln 2}{5730} = 1.210 \times 10^{-4}$<br>⇒ $11.0 = 15.6 e^{-1.210 \times 10^{-4} t}$<br>⇒ **t = 2900 years** |

**The end.**

# 黎 sir 簡介 Andy Lai BEng CUHK, MIEEE

5** Physics Economics

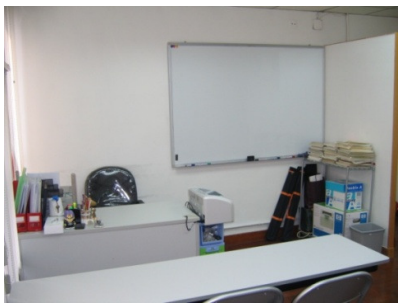
- ✧ 畢業於香港中文大學電子工程學系，黎 sir 教室創辦人之一.
- ✧ 超過 15 年教授中學文憑 / IB Diploma / GCE / HSC / SAT / AP / GCSE / IGCSE / IB MYP 課程經驗.
- ✧ 為了與學生一起面對中學文憑試, 黎 sir 親身上陣, 以實力於物理科及經濟科奪取 5**, 證明寶刀未老.
- ✧ 熟悉出題趨勢，教授考試取分技巧；鼓勵同學獨立思考，增強同學理解能力.
- ✧ 善用生活化例子講解，教法生動，增加學習趣味；深入淺出，明白學生學習上的困難和需要.
- ✧ 精心編制筆記，適合中文和英文中學學生就讀；精心編制練習和試題，協助同學盡快掌握答題技巧.
- ✧ 黎 sir 在中學和大學時代已是一名傑出學生，曾獲取的多項學業上和運動上的獎學金及獎項.
- ✧ 曾代表香港參加國際性運動比賽，取得優異成績，又讀得又玩得，絕不是死讀書的書呆子.
- ✧ 任教科目：所有數學科，物理科，化學科，生物科，經濟科，商業科.


## 黎 sir 教室學生佳績: Excellent Results

- ✧ 首屆香港中學文憑 (HKDSE)，多位學生取得 5/5*/5**級以上佳績. 更有學生考獲 5 科 5**級 2 科 5*級 1 科 5 級優異成績，在全港 72620 考生中，排名 28，入讀港大醫學院.
- ✧ 英國高考 (GCE AS/AL)，多位學生取得 A*/A 最高級別，更有學生考獲 5 科 A*.
- ✧ 國際文憑 (IB Diploma)，多位學生取得 6 / 7 級別，更有學生取得總分 40 分以上.
- ✧ 英國會考 (IGCSE / GCSE)，多位學生取得 A / A*成績，更有學生取得 8 科 A*。
- ✧ 加拿大大學預科 (CESI) 數學課程 MCV4U，取得 98 / 100, 99 / 100 成績。
- ✧ 學生成功拔尖 (EAS)，提早入讀港大理學院和中大法律學院.
- ✧ 香港中學會考 (HKCEE)，多位學生取得 20 分以上佳績.
- ✧ 保加利亞國際數學競賽 (BIMC 2013) 隊際賽金牌.
- ✧ 奧數華夏杯/港澳杯/華杯，多位學生取得特等獎/金獎/一等獎/全港第二名.
- ✧ 還有更多，恕不能盡錄，詳情請瀏覽以下網址: www.andylai.hk/result.htm


## 黎 sir 教室課程特色:

- ✧ 小組教學 (1 – 6 人)，導師親身教學；照顧每位學生需要，事半功倍.
- ✧ 精心編制筆記，練習以近 30 年本地和外國公開試題為藍本.
- ✧ 概念理解，取分技巧並重；協助同學盡快掌握答題技巧.
- ✧ 歡迎自由組合小組上課，時間及課程內容編排更有彈性.
- ✧ 詳情請瀏覽以下網址: www.andylai.hk



# 黎 sir 教室 A Lai Learning Center

## HKDSE / IB Diploma / GCE AS AL / AP / SAT / HSC

## IGCSE / GCSE / IB MYP / KS3 / MO / F.1 – F.6 / Y9 – Y13

## 資深中學補習導師 小組補習 事半功倍!!!

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- ✧ 現於黎 sir 教室任教補習班，學生就讀於英文中學，中文中學，國際學校及英國留學生.
- ✧ 熟悉近年出題趨勢，教授考試取分技巧；鼓勵同學獨立思考，增強同學理解能力
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- ✧ 黎 sir 在就讀大學時曾於全球最大美資電腦公司任實習生超過一年，大學畢業後旋即於全港大型英資電腦公司，負責主理該公司所代理的全球大型美資電腦公司儲存系統銷售業務.
- ✧ 於短短半年內將該產品線銷售業績提升超過 50%. 同時更被公司評選為"傑出表現員工 Outstanding Performer"，成功將書本上的知識靈活運用於工作上.
- ✧ 黎 sir 為了教學理想，毅然辭去工作，全身投入教學事業，希望將自己的一套學習方法教授學生

## 黎 sir 教室 課程特色

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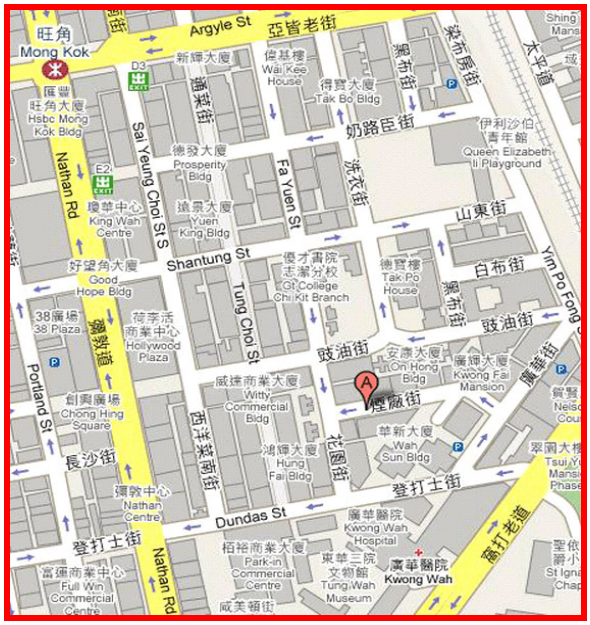


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| 小巴: | 1, 1A, 2, 3C, 6, 6C, 6F, 9, 30X, 35A, 41A, 42A, 60X, 63X, 68X, 69X, 81S, 87D, 93K, 95, 104, 117, 203, 212, 230X, 234P, 234X, 238P, 238S, 259B, 270P, 281A |
| 小巴: | 21K, 74, 74S |

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