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

2012 HKDSE PHYSICS Paper 1A

Suggested Solutions

Prepared by Andy Lai 

HKDSE 5** Physics Teacher

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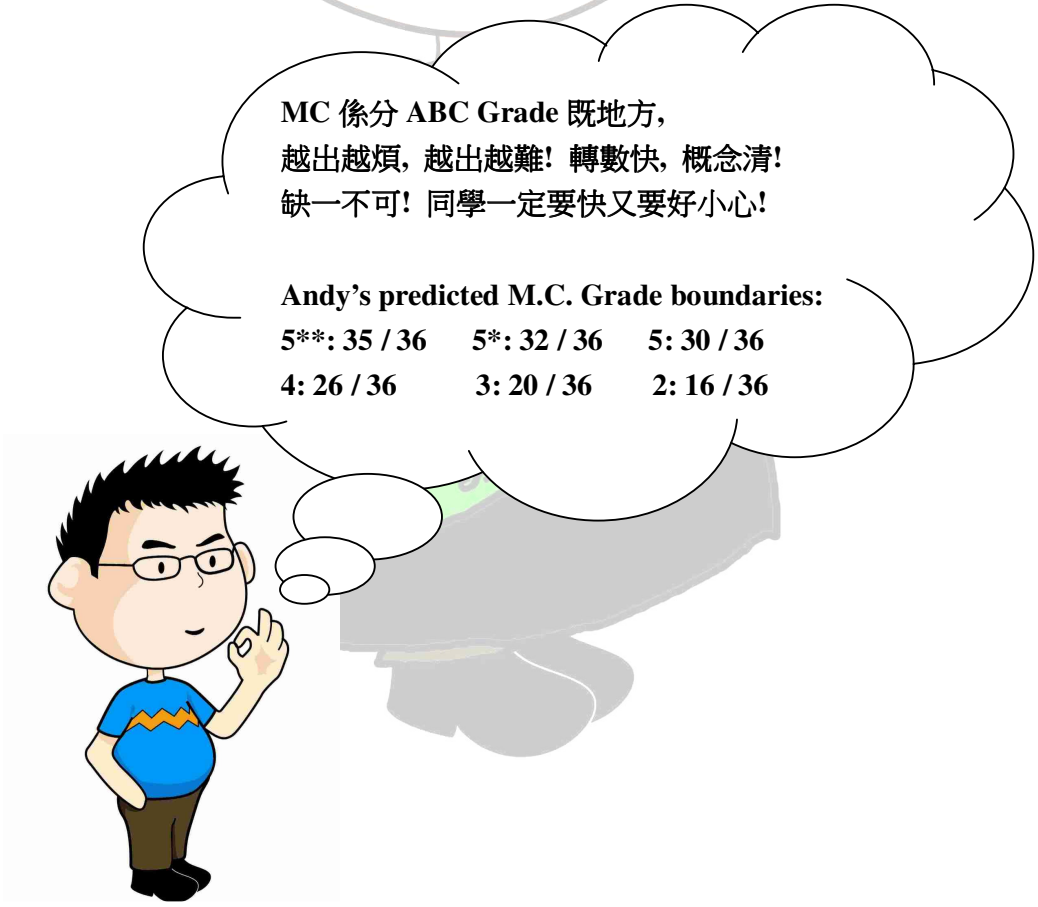
2012 HKDSE Physics Paper IA Suggested Answers

1.	C	2.	A	3.	A	4.	D	5.	A
6.	D	7.	A	8.	C	9.	B	10.	C
11.	A	12.	C	13.	D	14.	D	15.	B
16.	D	17.	B	18.	D	19.	A	20.	A
21.	A	22.	D	23.	C	24.	B	25.	B
26.	B	27.	B	28.	B	29.	D	30.	C
31.	B	32.	A	33.	C	34.	C	35.	C
36.	D								



Section A

1. C

黎 Sir 提提你 :

1. Let the mass of block X and block Y be m_X and m_Y respectively. the specific capacity of block X c_X and c_Y respectively

2. By Law of conversation of energy,

   Energy gained by block Y = Energy loss by block X

   $m_Y c_Y (40 - T) = m_X c_X (40 - T)$

   $c_Y (T - 30) = c_X (40 - T)$

3. Since $c_X > c_Y$ and so $T - 30 < 40 - T$ gives $T > 35$ degree celcius.

2. A

黎 Sir 提提你 :

1. The skin normally is hotter than the alcohol.
2. Therefore, Heat will transfer from skin to alcohol.
3. The alcohol gains enough K.E. to increase in temperature and gain enough P.E. to change from liquid to gas state, it will evaporate.

3. A

黎 Sir 提提你 :

1. By pV=nRT gives p = (nR/V)T which is a straight line for p (Pa) and T (K).

2. However, $T = \theta + 273$

3. Therefore, $pV = nR(\theta + 273)$ gives $p = \frac{nR}{V}\theta + \frac{273nR}{V}$ which is a straight line with slope = $\frac{nR}{V}$ and y-intercept $\frac{273nR}{V}$

4. Now, the number of gas molecules in the vessel is halved. Therefore, both the slope and y-intercept will decrease.

4.	**D**	**黎 Sir 提提你 :** **1. Increase in temperature ⇔ Increase in $\overline{K.E.}$ since the molecular** $\overline{K.E.} = \frac{3RT}{2N_A}$ **2. Changing state ⇔ Change in $\overline{P.E.}$ which is used to overcome the attractive force between molecules.** **3. Therefore, when water boils at 100 $^{\circ}C$, there is no change in temperature, only changing from water to steam.** **4. The potential energy of water molecules increases to overcome the attractive force between them and so they can increase the distance between water molecules.**

5.	**A**	**黎 Sir 提提你 :** **1. When θ increases from $0^o \le \theta \le 180^o$** **Resultant Force** = $\sqrt{(F_1\cos\theta + F_2)^2 + (F_1\sin\theta)^2}$ = $\sqrt{F_2^{\,2}\cos^2\theta + 2F_1F_2\cos\theta + F_2^{\,2} + F_1^{\,2}\sin^2\theta}$ = $\sqrt{F_2^{\,2} + 2F_1F_2\cos\theta + F_2^{\,2}}$ **2. Therefore, by substituting $\theta = 0^o$, $\theta = 30^o$, $\theta = 60^o$, $\theta = 90^o$, $\theta = 135^o$ and $\theta = 180^o$, you will find the resultant force is decreasing.**

6.	**D**	**黎 Sir 提提你 :** **1. By principle of moment,** **Sum of clockwise moment at any point = Sum of clockwise moment at that point.** **2.** $T(1.5\sin\theta) = Mg(1)$ **3. Therefore, the initial force required to raise the gang plank when it is horizontal is:** $T(1.5\sin 45) = Mg(1)$ **and gives** $T = 0.94Mg$ **4. As the gangplank rise,** θ **increases and so tension will decreases and so smaller than 0.94Mg.**

7.	**A**	**黎 Sir 提提你 :** **1. For free fall body, the acceleration due to gravity is always equal to –g when take downward is negative, i.e. a = -g** **2. For v-t graph, the slope = acceleration.** **3. Therefore, (1) is the only answer for v-t graph.** **4. For s-t graph, the slope = velocity.** **5. Therefore, (3) is the best answer since the slope of s-t graph is negative and increasing in magnitude, which means the velocity is going downward and increasing.** **6. However, do you when is the maximum point, the point of collision, the point of leaving the ground respectively representing on the v-t and s-t graphs respectively?**

8.	**C**	**黎 Sir 提提你 :** **1. Consider P and Q as a single system,** **By** $F_{net} = ma$**,** $F_1 - F_2 = 3ma$ **(Do you know why not** $F_2 - F_1$**?)** $a = \frac{F_1 - F_2}{3m}$ **2. Consider either P or Q separately,** **For P:** $F_1 - T = ma$ **or For Q:** $T - F_2 = 2ma$ $T = F_1 - m(\frac{F_1 - F_2}{3m})$ **or** $T = F_2 + 2m(\frac{F_1 - F_2}{3m})$ $T = \frac{1}{3}(2F_1 + F_2)$

9.	**B**	**黎 Sir 提提你 :** **1. By Power = Energy / time** **2. P= mgh / t** **3. P = (0.5)(9.81)(2.5)/1.5 = 8.175 W = 8.2 W (to 2 sig. fig.)**

10. **C**

黎 Sir 提提你 :

1. **By Newton's 1st law, Net Force on the body = Zero**
   $\Rightarrow$ Either at rest or uniform velocity.
   Therefore, the 1st statement is true.

2. **The direction along the plane:** $mg\sin\theta = friction$
   which gives friction = $mg\sin 30^o = 0.5mg$
   Therefore, the 2nd statement is true.

3. **The Net force is zero in all direction.**
   Therefore, the acceleration is always zero.
   Therefore, the 3rd statement is wrong.

11. **A**

黎 Sir 提提你 :

1. **By Newton's 2nd Law,**

$$F_{net} = ma$$

$$F_{net} = ma$$

$$F - f = ma$$

$$F - f = ma$$

$$a = (\frac{1}{m})F - \frac{f}{m}$$

2. **Therefore, slope = 1/m and y-intercept = -f/m**

12. **C**

黎 Sir 提提你 :

1. **By considering vertical motion:** $u = 0$, $v = ?$, $a = -9.81$, $s = -1000$, $t = ?$
2. **By** $s = ut + \frac{1}{2}at^2$ **gives** $-1000 = \frac{1}{2}(-9.8)t^2$ **gives t = 14.3s**
3. **Remember, Vertical motion and Horizontal motion are independent.**

13. D

黎 Sir 提提你 :

1. By Law of conversation of momentum,

The total linear momentum of a system is conserved provided that there is no external force acting on the system.

There is no external force in the system. Therefore, in all direction, the total linear momentum of a system is conserved.
Statement 1 is wrong.

2. For elastic collision, the total kinetic energy for the whole system is conserved.

The total kinetic energy of the whole system before collision = $\frac{1}{2}mu^2$

Therefore, the total kinetic energy of the whole system after collision is also equal to $\frac{1}{2}mu^2$

Statement 2 is true.

3. By Law of conservation of energy and elastic collsion:

$\frac{1}{2}mu^2 = \frac{1}{2}mv_P^2 + \frac{1}{2}mv_Q^2$ **where** v_P **and** v_Q **are the velocity of P and Q after collision.**

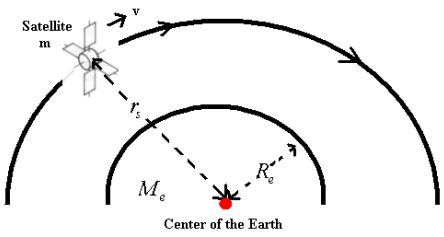
$$\frac{1}{2}mu^2 = \frac{1}{2}m(v_P^2 + v_Q^2)$$
$$u^2 = v_P^2 + v_Q^2$$

Since $v_P \neq 0$**, therefore,** $v_Q < u$

Statement 3 is wrong.

14. **D**

黎 Sir 提提你 :



1. **Consider a satellite moving around the Earth. As the satellite is in a circular orbit around the Earth, the gravitational force (weight) acting on the satellite provides the centripetal force needed for circular motion.**

2. **By Newton's Law of Gravitation and Newton's 2nd Law:**

$$F_{net} = ma$$

$$\frac{GM_e m}{r_s^2} = \frac{mv^2}{r_s} \quad \textbf{where} \quad a = \frac{v^2}{r}$$

$$v = \sqrt{\frac{GM_e}{r_s}} \quad \textbf{or} \quad v = \sqrt{\frac{g_o R_e^{\,2}}{r_s}} \quad (\because g_o = \frac{GM_e}{R^2} = 9.8 ms^{-2})$$

3. **Therefore, <u>the speed</u> required for the satellite moving around the Earth is independent of the mass of the satellite, <u>only depends on the radius of the orbit (r_s) and the mass of the Earth (M)</u>**

4. **Moreover,** $\frac{GM_e m}{r_s^2} = \frac{mv^2}{r_s} \Rightarrow \frac{GM_e}{r_s} = v^2 \Rightarrow \frac{GM_e}{(\frac{vT}{2\pi})} = v^2 \Rightarrow GM_e 2\pi = v^3 T$

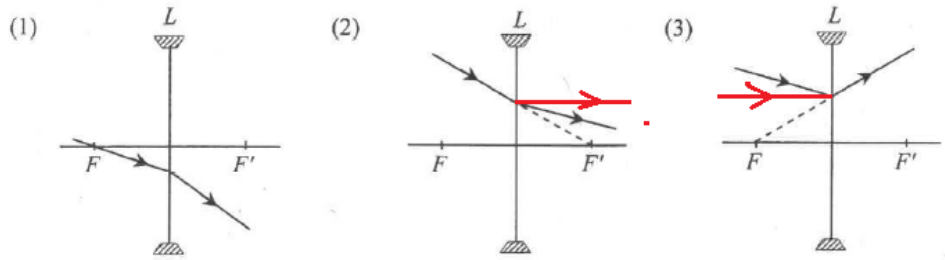
Therefore, v^3T = constant, which means same velocity implies same period.

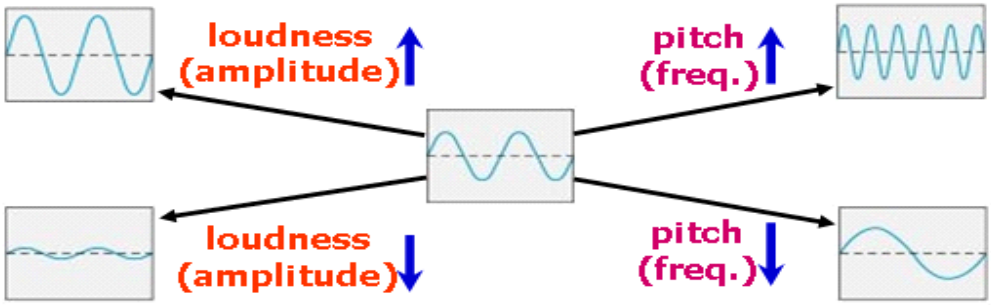
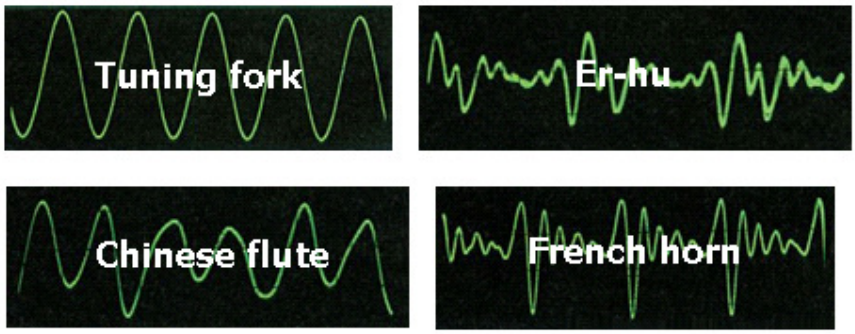
Therefore, Option D is the wrong option.

15.	B	黎 Sir 提提你 : 1. In travelling waves, all particles will under vibration and will not stay at rest forever. They will only be at rest at amplitude. 2. In travelling waves, the particles with separation equal to one wavelength are in phase. Particles with separation equal to half wavelength are anti-phase. 3. The wavelength of the wave is equal to the distance between particle a and particle i, which is equal to 32 cm. 4. The frequency of the wave is unknown since the period of the wave cannot be determined. 5. Remarks: Please note that you cannot simply says the period is 0.1 x 2 = 0.2 s since you do not know the vibration of the particles between t = 0 s to t = 0.1 s exactly. The particle may complete 0.5 cycle, 1.5 cycle, 2.5 cycles, etc.

16.	D	黎 Sir 提提你 : 1. When a pulse travel from less dense medium to denser medium, there will be a π phase change on the reflected pulse. 2. Therefore, the answer follows.

17.	**B**	**黎 Sir 提提你 :** **1. By ($\frac{n_1}{n_2}=\frac{\lambda_2}{\lambda_1}$), the refractive index of medium X = (4/3) x 1 = 1.33** **2. Please remember: $\frac{n_1}{n_2}=\frac{v_2}{v_1}=\frac{\lambda_2}{\lambda_1}=\frac{\sin\theta_2}{\sin\theta_1}$.**
18.	**D**	**黎 Sir 提提你 :** **1. For stationary wave,** **Different particles have different amplitudes.** **In particular, amplitude is maximum at anti-nodes but minimum at nodes.** **All particles attain their amplitude at the same time.** **2. Therefore, P attains its amplitude (crest) at t = 0.** **3. The result follows.**
19.	**A**	**黎 Sir 提提你 :** **1. In air, the wavelength of infra-red is longer than that of ultraviolet radiation.** **2. Please remember the following Electromagnetic magnetic wave spectrum:** **$\uparrow f$ / $\downarrow \lambda$: Radio waves $\Rightarrow$ Microwave $\Rightarrow$ Infrared $\Rightarrow$ Visible light $\Rightarrow$ UV light $\Rightarrow$ X-ray $\Rightarrow$ Gamma ray**

20.	**A**	**黎 Sir 提提你 :** **1. By** $d\sin\theta = n\lambda$, **For Red light:** $d\sin\theta = m(657)$ **---(1) , m is the order of diffracted red light.** **For Violet light:** $d\sin\theta = n(438)$ **---(2), n is the order of diffracted violet light** **2. (1) / (2) gives** $\frac{d\sin\theta}{d\sin\theta} = \frac{m(657)}{n(438)}$ $\frac{m}{n} = \frac{438}{657} = \frac{2}{3}$ $m:n = 2:3$
21.	**A**	**黎 Sir 提提你 :** **1. The correct path for the light ray before and after passing through the concave lens L is shown as follows:** 

22.	D	黎 Sir 提提你 : 1. ↑Pitch of the note ⇔ ↑Frequency of the note ⇔ ↑no. of waves per second 2. ↑Loudness of the note ⇔ ↑Amplitude of the note  3. Note = Fundamental frequency + Overtones (Overtones = notes of frequency of multiples of fundamental frequency) Quality of the note depends numbers and amplitude of overtones accompanying the fundamental frequency.  Because of quality, you can distinguish Andy Lau's voices and Andy Lai's voices singing the same song and pitch. Also, you can distinguish trumpet sound and guitar sound although they are performing the same kind of songs. 4. The result follows.

23. **C**

黎 Sir 提提你 :

1. **Human beings ⇒ Hearing of Short range of frequencies**
   ⇒ Audible Frequency Range! (20 Hz – 20000 Hz)

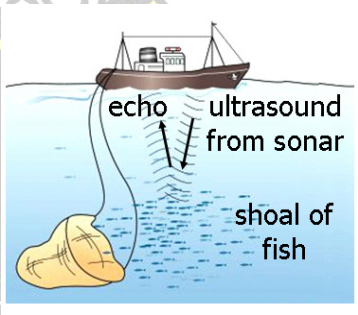
Frequency	
20 000 Hz	Highest freq. heard
10 000 Hz	Whistle
1000 Hz	High note from soprano
100 Hz	Low note from bass
20Hz	Lowest freq. heard

Common audible sound

2. **Frequency of sound > 20000 Hz ⇒ Ultrasonic waves**

3. **Applications of ultrasound:**

   e.g. Sonar: $v = f\lambda$, $\because v =$ **constant,** $\propto$ **degree of diffraction!**



4. **The results follows.**

24. **B**

黎 Sir 提提你 :

1. Assume P and R is negatively charged ⇒ Q and R repel instead of attract!

P and Q	R and S	Q and R
		

2. Assume P and R is positively charged ⇒ Q and R repel instead of attract!

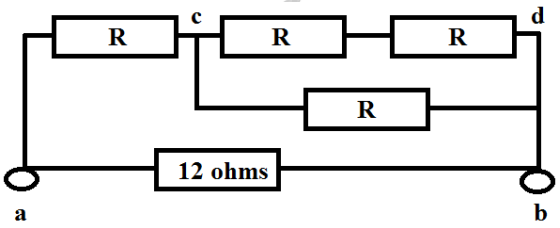
P and Q	R and S	Q and R
		

3. Assume P is positively charged and S is negatively charged
⇒ Q and R attract!

P and Q	R and S	Q and R
		

4. Remarks: Like charges repel, unlike charges attract.

25.	B	黎 Sir 提提你 : 1. By $E = \frac{Q}{4\pi\varepsilon_o r^2}$ and it is a vector quantity, the addition of E-field is calculated by vector-sum method and the direction is from positive charge to negative charge. 2. At either Point X or Y, Both Electric field due to +2Q and –Q is pointing to the right. Therefore, it is impossible for them to cancel each other. 3. At point Z, Electric field due to +2Q is pointing to the right while the Electric field due to -Q is pointing to the left. The charge of +2Q is larger than that of –Q but the distance of Z from +2Q is larger than that from –Q, the magnitude of E-field may cancel each other. 4. By $E = \frac{Q}{4\pi\varepsilon_o r^2}$ and it is a vector quantity, the addition of E-field is calculated by vector-sum method. 5. By $V = \frac{Q}{4\pi\varepsilon_o r}$ and it is a scalar quantity, the addition of electric potential is calculated by scalar-sum method. 6. At Point X, the potential due to +2Q is positive and that due to –Q is negative. However, the distance between X and +2Q is the larger than that between X and –Q. Therefore, the magnitude of potential of +2Q must be larger than that of –Q. Therefore, the potential at point X cannot be cancelled. 7. At either point Y or Z, the potential due to +2Q is positive and that due to –Q is negative. However, the distance between them and +2Q is longer than that between them and –Q. Therefore, the magnitude of potential of +2Q may be equal to that of –Q. Therefore, the potential at point Y or Z may be cancelled. 8. By elimination and choosing the best answer, the result follows.

26.	**B**	**黎 Sir 提提你 :** **1. The circuit diagram can be redrawn as follows:**  **2. Thinking Backward:** **Equivalent Resistance across terminal a and b = 6 ohms** **⇒ Equivalent resistance of the combination of all resistor R = 12 ohms** **(Do you know why?)** **3. Now, replace the 12-ohm resistor with 6-ohm resistor.** **The equivalent resistance across terminal a and b = [(6)(12)]/(6+12) = 4 ohms** **4. Remarks: For convenience:** $R = \frac{R_1}{n}$ **if** $R_1 = R_2 = R_3 = ... = R_n$ **.**
27.	**B**	**黎 Sir 提提你 :** **1. If the resistance of the rheostat becomes zero, the light bulb will become short-circuited.** **2. Therefore, all the current will flow through the rheostat instead of flowing through the light bulb.** **3. The light bulb will not light up.**

28.	**B**	**黎 Sir 提提你 :** **1. Equivalent resistance of 3-ohm resistor parallel to 6-ohm resistor** **= 3 x 6 / (3 + 6)** **= 2 ohm** **2. Therefore the potential difference across the internal resistor** **= 12 x (2 / 4)** **= 6 V** **3. Therefore, the voltage across the 6-ohm resistor** **= 12 – 6** **= 6 V** **4. Therefore, the current across the 6-ohm resistor** **= 6 / 6** **= 1 A**

29.	D	黎 Sir 提提你 : 1. By Fleming's left hand rule (FBI), Thumb: Force First finger: B-field Middle finger: Current 2. The magnitude of the magnetic force per unit length experienced by wire X due to wire Z = F. 3. Force per unit length acting on Z by the B-field of X = F (To the left) (Do you know why?) 4. Force per unit length acting on Z by the B-field of Y = 3F (To the left) (Do you know why?) 5. The magnetic force per unit length on Z due to both X and Y = 4F = F (To the left)

30.	C	黎 Sir 提提你 : 1. By Fleming's left hand rule (FBI), Thumb: Force First finger: B-field Middle finger: Current 2. However, the direction of electron flow is opposite to the conventional current. 3. Therefore, the direction of force acting on the electron is downward. 4. If the electron keeps moving in the straight direction, there must be an electric force acting on it upwards. 5. Therefore, the electric field should be pointing from the top to the bottom.

31.	**B**	**黎 Sir 提提你 :** **1. By Lenz' Law:** **Induced current flows in a direction such that it opposes the change that causing it!** **2. There is a change in magnetic flux linkage when the square metal frame with side L moving with uniform speed into and out of the magnetic field of side 5L, although the direction of current is different.** **3. The total time period during which a current is induced in the frame = 2L/v.**

32.	**A**	**黎 Sir 提提你 :** **1. According to Faraday's law of electromagnetic induction:** **The voltage induced in a conductor is directly proportional to the rate at which conductor cuts through the magnetic field lines.** **2. Since the conductor rod PQ is cutting through the magnetic field of the Earth, there will be induced voltage across it.** **The 1st statement is true.** **3. However, this is an open circuit. Therefore, there is no induced current.** **The 2nd statement is wrong.** **4. There is a no current in the conductor rod PQ. Therefore, there is no magnetic force acting on conductor rod PQ.** **The 3rd statement is wrong.**

33.	**C**	**黎 Sir 提提你 :** **1. The fuse blows if the current in live wire is much larger than normal operation.** **2. If X and Y are connected, it is short-circuited and the resistance is nearly zero. Therefore, the current is too large and the fuse blows.** **3. If Y and Z are connected, it is also short-circuited since the potential of the neutral and the earth wire is also 0 V, the resistance is nearly zero. Therefore, the current is too large and the fuse blows.** **4. If X and Z are connected, it is no effect since the potential of the neutral and the earth wire is also 0V, there is no potential difference between them and so no current passing through them.** **5. Remember: Potential of Live wire: +/- 220 V Neutral and Earth wire: 0 V**

34.	**C**	**黎 Sir 提提你 :** **1. The filament F is heated by the negative terminal P, the electrons inside the filament can get enough energy to overcome the attractive forces between the free electrons and the positively charged nucleus. This emission of electrons is called "Thermionic emission".** **2. After the emission of electrons, they will be accelerated by the positive terminal Q.** **3. When the electrons collide with the metal target T, the X-rays are emittied from T as a form of electromagnetic wave.**

35.	**C**	**黎 Sir 提提你 :** **1. By $N = N_o e^{-\frac{\ln 2}{t_{1/2}}t}$, when $t_{1/2} = 20$ and t = 10,** $N = N_o e^{-\frac{\ln 2}{2}}$ $N = 0.707 N_o$ **2. Therefore, $\frac{3}{4} > f > \frac{1}{2}$.**

36.	**D**	**黎 Sir 提提你 :** **1. Let A be the mass number, N be the neutron number and P be the proton number.** **2. By A = N + P,** **N = A – P which a a straight line with slope = 1 and y-intercept = -P.**

The end.

黎 sir 教室將陸續推出下列新高中香港中學文憑試模擬試題系列,包括:

- ✧ **2012 HKDSE Physics Mock Exam Set 1 – Paper 1 (Heat and Gases)**
- ✧ **2012 HKDSE Physics Mock Exam Set 1 – Paper 2 (Heat and Gases)**
- ✧ **2012 HKDSE Physics Mock Exam Set 2 – Paper 1 (Force and Motion)**
- ✧ **2012 HKDSE Physics Mock Exam Set 2 – Paper 2 (Force and Motion)**
- ✧ **2012 HKDSE Physics Mock Exam Set 3 – Paper 1 (Wave Motion)**
- ✧ **2012 HKDSE Physics Mock Exam Set 3 – Paper 2 (Wave Motion)**
- ✧ **2012 HKDSE Physics Mock Exam Set 4 – Paper 1 (Electricity and Magnetism)**
- ✧ **2012 HKDSE Physics Mock Exam Set 4 – Paper 2 (Electricity and Magnetism)**
- ✧ **2012 HKDSE Physics Mock Exam Set 5 – Paper 1 (Radioactivity and Nuclear Energy)**
- ✧ **2012 HKDSE Physics Mock Exam Set 5 – Paper 2 (Radioactivity and Nuclear Energy)**
- ✧ **2012 HKDSE Physics Mock Exam Set 6 – Paper 1 (Astronomy and Space Science)**
- ✧ **2012 HKDSE Physics Mock Exam Set 7 – Paper 1 (Atomic World)**
- ✧ **2012 HKDSE Physics Mock Exam Set 8 – Paper 1 (Energy and Use of Energy)**
- ✧ **2012 HKDSE Physics Mock Exam Set 9 – Paper 1 (Medical Physics)**

- 特別為應考香港新高中中學文憑試的同學編寫的模擬試題系列.
- 深淺程度參考過往會考和高考熱門試題, 再加上可能出現的新題種.
- 每條試題結尾均標註了相關課程章節, 提醒同學"唔會讀漏書".
- 概念(Qualitative)與計量(Qualitative)並重, 讓同學深入思考, "轉多幾過彎".
- 特別設計"分課題(By Topics) "模擬試題, 讓同學可以按課題熟識程度練習.
- 同學完成這一系列模擬試題後, 希望能幫助提升應考中學文憑試的信心.

Level 5**:	100% (The Best of the Best!)
Level 5*:	90%↑ (Superb!)
Level 5:	80% ↑ (Excellent!)
Level 4:	70% ↑ (Quite good!)
Level 3:	60% ↑ (Not bad!)
Level 2:	50% ↑ (Need improvement!)
Level 1:	40%↑ (Need revise again!)
Unclassified:	40%↓ (Zero Knowledge!)

Remarks:

1. This is my opinion only, not official HKEAA standard.

黎 sir 簡介 Andy Lai BEng CUHK, MIEEE

5 Physics

- ✧ 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新制度的中學文憑試, 黎 sir 親身上陣, 以實力於物理科奪取 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：

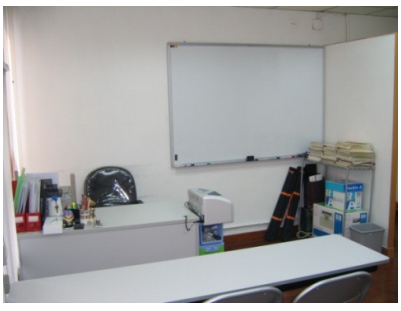
Excellent Results

- ✧ 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!!!

黎 sir 簡介 *Andy Lai* BEng CUHK, MIEEE

5 ★★ Physics

- ✧ 畢業於香港中文大學，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新制度的中學文憑試, 黎 sir 親身上陣, 以實力於物理科奪取 5**, 證明寶刀未老.
- ✧ 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
- ✧ 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.
- ✧ 中英對照筆記, 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.
- ✧ 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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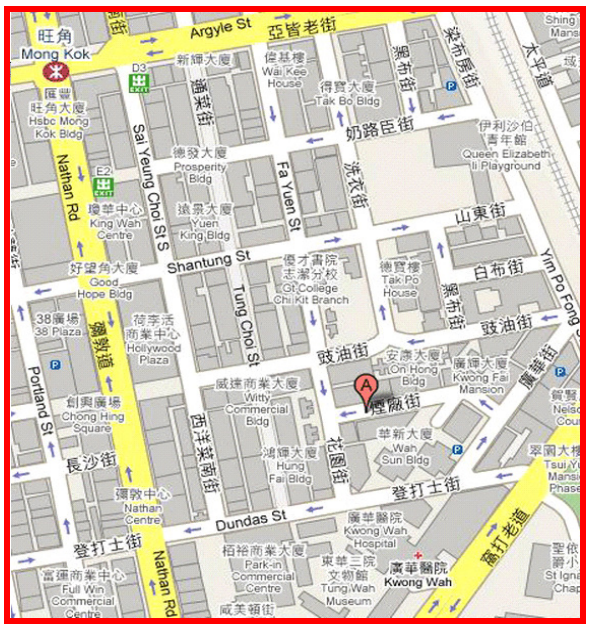

地鐵: 旺角 E2 出口，油麻地 A2 出口

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

黎Sir教室 A Lai Learning Center

上課地址: 香港九龍旺角煙廠街 9 號興發商業大廈 706 室.

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