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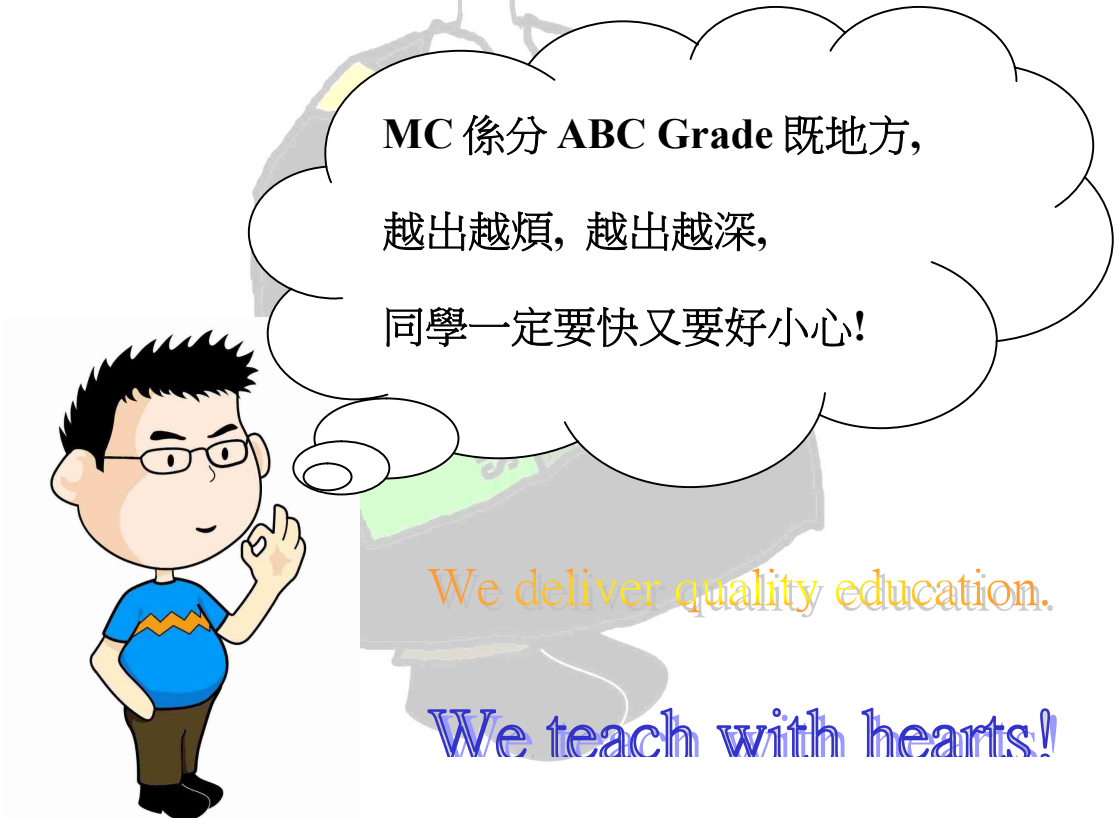
2017 HKDSE PHYSICS Paper 1A Suggested Solutions

Prepared by Andy Lai

HKDSE 5** Physics Teacher



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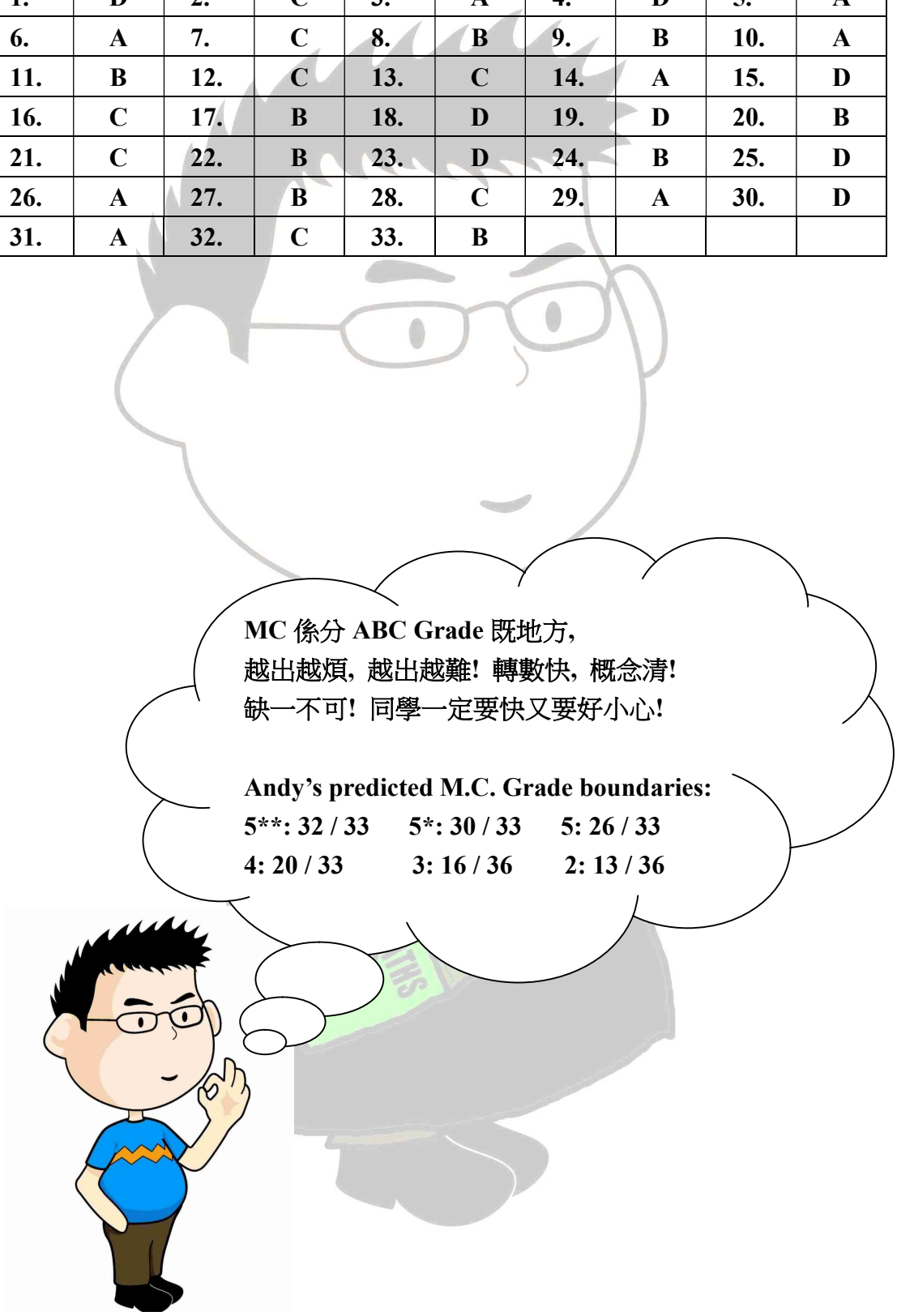
2017 HKDSE Physics Paper 1A Suggested Answers

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



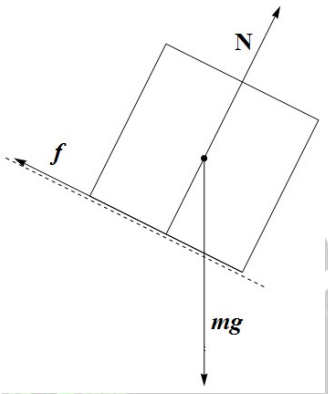
Section A		
1.	D	黎 Sir 提提你 : 1. (0.03)(3800)(T-10) = (0.12)(4200)(80-T) $\Rightarrow$ T = 67.08 $\approx$ 67.1 ^{o}C

2.	C	黎 Sir 提提你 : 1. The higher the horizontal line $\Rightarrow$ The higher the melting point 2. The longer the horizontal line $\Rightarrow$ The larger the specific latent heat of fusion

3.	A	黎 Sir 提提你 : 1. Option (1) is true. ● Solid to Liquid ⇔ ↑ Total Potential Energy (P.E.) (Do you know why?) ● Latent heat of fusion (l): Energy absorbed by a substance when it changes from solid to liquid without changing in temperature. ● Therefore, Latent heat of fusion (l) = Total Potential Energy (P.E.) 2. Option (2) is true. ● Internal Energy (I.E.): ● ∑ Kinetic Energy (K.E.) (Temperature) + ∑ Potential Energy (P.E.) (State) ● Vapour condenses ⇔ Gas to Liquid ⇔ ↓ Total *P.E.* ⇒ ↓ I.E. 3. Option (3) is wrong. ● Different molecules in a liquid have different kinetic energy and speed. ● The collision of molecules makes some molecules gain enough energy to leave the surface of the liquid. ● When those molecules with more kinetic energy leave, the other molecules with less kinetic energy will stay. ● Therefore, the internal energy of the remaining liquid increase.

4.	**D**	**黎 Sir 提提你 :** **1. By PV = nRT** **2.** $\begin{cases}(2\times10^5)(V)=nR(10+273)...(1)\\ P(\frac{V}{2})=nR(100+273)...(2)\end{cases} \overset{(1)\div(2)}{\Rightarrow} \begin{cases}\frac{4\times10^5}{P}=\frac{283}{373}\end{cases} \Rightarrow P=5.27\times10^5\ N\ m^{-2}$

5.	**A**	**黎 Sir 提提你 :** **1. Average Speed = Total distance travelled / Total time taken** **⇒ ↓Time but same distance travelled ⇒ ↑Average speed** **2. Average Velocity = Total displacement travelled / Total time taken** **⇒ Greater distance ≠ Greater displacement** **⇒ Average Velocity may not increase.** **3. Greater velocity may be constant velocity ⇒ acceleration = 0 m s^{-2}** **4. Two objects having the same acceleration may not move in the same direction** ● **For example, two cars having same acceleration, however, one car can accelerate while another one decelerates in an opposite direction.**

6.	A	黎 Sir 提提你 : 1. By equation of motion: ● u = 0, v = ?, a = ? s = 1, t = 3s! ● By $s = ut + (1/2)at^2 \Rightarrow 1 = 0 + (1/2)a(3^2) \Rightarrow a = 0.22\ m\ s^{-2}$
7.	C	黎 Sir 提提你 : 2. Newton's first law: $F_{net} = 0\ N \Rightarrow$ At rest or uniform velocity ! 3. Normal reaction (N): Force on the block by the inclined surface of the plane 4. Weight (mg): Force on the block by the Earth 5. Friction (f): Force on the block by the inclined surface of the plane  6. Remember, components of forces MUST NOT be drawn on the free body diagram of any body !!!

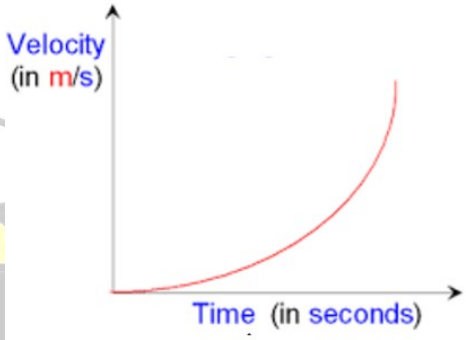
8.	**B**	**黎 Sir 提提你 :** **1. Uniform selfie stick ⇒ The center of mass is at the center of the stick** **2. Principle of Moment:** ● **For Rotational equilibrium:** ● **Sum of clockwise moment at any point = Sum of anticlockwise moments about that point.** **3. Take moment at the point where F_1 act on: (Do you know why?)** ● $F_2(0.1) = (1.5)(0.35) + 2(0.7) \Rightarrow \quad F_2 = 19.3\ N$ **4. Andy's special skills:** ● **Taking moment at the point of unknown force you don't want to know !!!**

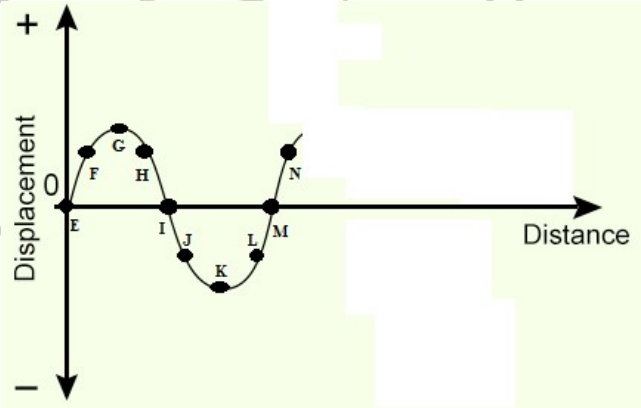
9.	B	黎 Sir 提提你 : 1. Projectile motion ⇒ Independence of horizontal and vertical motion 2. Horizontal motion ⇒ Constant velocity ! 3. Vertical motion ⇒ Constant acceleration = 9.81 m s^{-2} ! 4. Height of Starting position of marble P > That of marble Q ● However, horizontal displacement travelled by P < That of Q ⇒ Initial speed of marble P < Initial speed of marble Q 5. Height of Starting position of marble P > That of marble Q ● Given the mass of marble P = the mass of marble Q ⇒ Gravitational potential energy loss of Marble P > That of marble Q 6. Height of Starting position of marble P > That of marble Q ● The initial vertical velocity of marble P = That of marble Q = 0 m s^{-1} ● The vertical acceleration of marble P = That of marble Q = 9.81 m s^{-2} ! ⇒ By $s = ut + \frac{1}{2}at^2$ ⇒ $s = \frac{1}{2}(-9.81)t^2$ ⇒ ↑s ⇒ ↑t ⇒ The time of flight of marble P is longer than that of marble Q.

10.	**A**	**黎 Sir 提提你 :** **1. Loss in G.P.E. of block Y = Gain in K.E. of block X and block Y** $(1)(9.81)(1) = (\frac{1}{2})(1+0.5)(v^2) \Rightarrow v = 3.62\ m\ s^{-1}$ **2. Remarks: Law of conservation of energy is the first priority to solve problems in mechanics.**

11.	B	黎 Sir 提提你 : 1. Newton's first law: $F_{net} = 0\ N \Rightarrow$ At rest or uniform velocity ! 2. For figure (1), ● Tension in the string = Weight of the block = mg 3. For figure (2), ● Tension in the string = Component of the weight of the block along the inclined plane = $mg\sin\theta$ 4. Work done by the machine = ↑ G.P.E. + ↑ K.E. + work done against friction ● Same height $\Rightarrow$ Same amount of gravitational potential energy needed ● Constant speed $\Rightarrow$ No gain in kinetic energy ● Smooth surface $\Rightarrow$ No work done against friction ● Therefore, work done by the machine of the two blocks are the same. 5. Average power = $\frac{Work\ done\ by\ the\ machine}{time\ taken}$ ● Same speed $\Rightarrow \uparrow Distance \Rightarrow \uparrow Time\ taken \Rightarrow \downarrow Average\ Power$ ● Therefore, Average power of figure (2) is lower than that of figure (1)

12.	**C**	**黎 Sir 提提你 :** **1. Newton's 2nd Law:** $F = ma \Rightarrow F = m(\frac{v-u}{t}) \Rightarrow F = \frac{mv-mu}{t}$ **--- (1)** **6.** $\therefore$ **Net Force acting on a body = Rate of Change of momentum of the body.** **7. Initial momentum:** mu**, Final momentum:** mv**, Time taken:** t**.** **2. Rearrange** $F = \frac{mv-mu}{t} \Rightarrow Ft = mv-mu$ **8.** Ft**: Impulse,** $mv-mu$**: Change in momentum,** t**: Impact time** **9.** $\therefore$ **Impulse = Change in momentum.** **3. Given Same Change in Momentum** $\Rightarrow$ $mv-mu =$ **Constant.** $\Rightarrow$ $Ft =$ **Constant** ● $\uparrow t \Leftrightarrow \downarrow F$

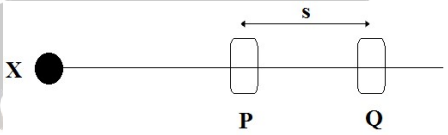
13.	**C**	**黎 Sir 提提你 :** **1. Gravitational Field Strength of the planet at a distance r from its center of mass:** $g = \frac{GM}{r^2}$ ● $r \downarrow \Rightarrow g \uparrow$ **2. Slope of the velocity-time graph = acceleration of the body = g !** ● $r \downarrow \Rightarrow g \uparrow \Rightarrow$ **Slope of the velocity graph** $\uparrow$ **3. Therefore, the answers follows:**  **Velocity-time graph**

14.	A	黎 Sir 提提你 : 1. Find out which particle in equilibrium position at time = 1s ● Particle E, I and M (Do you know why?) 2. Assume the direction to the right is positive ● Particle F, G and H and N is going to the right while particle J, K and L is going to the left. (Do you know why?) 3. Draw the displacement-distance graph of the waves at time t = 1s as follows:  ● Particle E and I is in equilibrium ⇒ Moving downward and upward respectively! (Do you know why?) 4. We cannot know the period from the displacement-distance graph which gives us no time information.

15. **D**

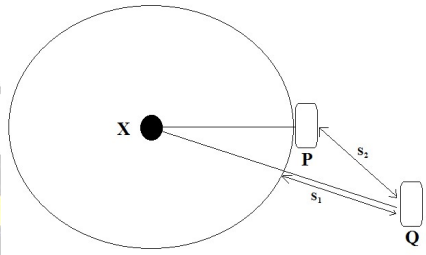
黎 Sir 提提你 :

1. X, P and Q must be along the same straight line. Otherwise, the distance travelled will be calculated wrongly.



X, P and Q are along the same straight line

- **From the diagram below, you can imagine X is the center of the circle with XP as a radius.**
- **If we measure S_2 as the distance PQ instead of measure S_1 as the distance PQ, then the speed of sound will be calculated wrongly.**



X, P and Q are not along the same straight line:

2. $Percentage\ Error = \dfrac{Maximum\ absolute\ error}{True\ value} \times 100\%$

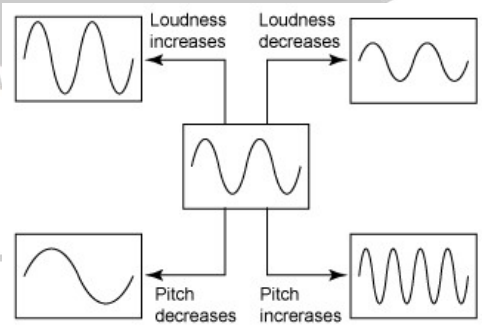
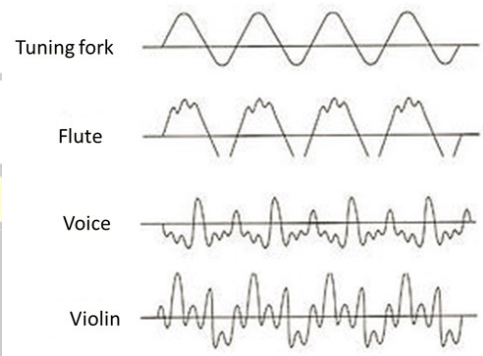
- **Maximum absolute error = 0.5 x Finest scale, independent of distance PQ**
- **Therefore,** $\uparrow True\ value \Rightarrow \downarrow$ **Percentage error**

3. Speed of sound in air only depends on the condition of air, like density of air.

- **Therefore, the speed of sound is independent of the distance between X and P and the distance of PQ is not confined to be equal to an integral multiple of wavelengths of the sound.**

16.	**C**	**黎 Sir 提提你 :** **1. Wave speed depends on medium of travel.** **2. Wave frequency depends on the vibrating sources only.** **3. By $v = f\lambda$, $\lambda\uparrow \Rightarrow v\uparrow$ ($\because f$ remains unchanged!)** ● **Therefore, Speed of water waves in region X is lower than that in region Y.** **4. From slower medium to faster medium $\Rightarrow$ Bends away from normal ! (Do you know why?)** **5. The length of wavelength only depends on the depth of water, it is independent of the direction of wave travel.**

17.	**B**	**黎 Sir 提提你 :** **1. Reflection of waves $\Rightarrow$ Direction of travel of a wave is reversed.** **2. A wave is travelling from one medium to another medium along the normal of the boundary** **$\Rightarrow$ The direction of a wave will not change.** **3. A wave travels through a gap smaller than its wavelength** **$\Rightarrow$ A wave will diffract.**

18.	**D**	**黎 Sir 提提你 :** **1. ↑ Pitch of the note ⇔ ↑ Frequency of the note** **2. ↑ Loudness of the note ⇔ ↑ Amplitude of the note**  **3. Quality of the note ⇔ Waveforms**  **4. Because of quality, you can distinguish Andy Lau's voices and Andy Lai's voices singing the same song with same loudness and pitch. Moreover, you can distinguish trumpet sound and guitar sound although they are performing the same song with same loudness and pitch.** **5. Wave speed depends on medium of travel and types of waves only !**

19.	D	黎 Sir 提提你 : 1. Lens formula: $\frac{1}{u}+\frac{1}{v}=\frac{1}{f}$ ● u: object distance / v: image distance / f: focal length 2. Real-is-positive convention. ● u MUST be positive for real object. ● v is positive for real image while v is negative for virtual image. 3. f is positive for convex lens. 4. f is negative for concave lens. 5. $\frac{1}{+30}+\frac{1}{-20}=\frac{1}{f} \Rightarrow f=-60$ 6. $\frac{1}{+30}+\frac{1}{v}=\frac{1}{+60} \Rightarrow v=-60$

20.	**B**	**黎 Sir 提提你 :** **1. By** $d\sin\theta = n\lambda \Rightarrow \begin{cases} d\sin\theta_1 = (1)\lambda \\ d\sin(\theta_1+\theta_2) = (2)\lambda \end{cases} \Rightarrow \begin{cases} \theta_1 = \arcsin\left(\frac{\lambda}{d}\right) \\ \theta_1+\theta_2 = \arcsin\left(\frac{2\lambda}{d}\right) \end{cases} \Rightarrow \theta_1 \neq \theta_2$ **2.** $\begin{cases} d\sin 20^o = (1)\lambda \\ d\sin(90^o) \geq (n_{\max})\lambda \end{cases} \Rightarrow \begin{cases} d(0.342) = \lambda \\ d \geq n_{\max}\lambda \end{cases} \overset{(1)\div(2)}{\Rightarrow} \begin{cases} 0.342 \leq \frac{1}{n_{\max}} \end{cases} \Rightarrow n_{\max} \leq 2.92$ ● **Therefore,** $n_{\max} = 2 \neq 4$ **3.** $\lambda_{water} < \lambda_{air} \Rightarrow \left(\sin\theta_1 \downarrow\right) = \frac{(1)(\lambda\downarrow)}{d} \Rightarrow \theta_1 \downarrow$ **4. Remarks:** $\sin\theta\downarrow$ **and** $\cos\theta\uparrow \Leftrightarrow \theta\downarrow$ **(for** $0^o \leq \theta \leq 90^o$**)**

21.	**C**	**黎 Sir 提提你 :** **1. Speed of sound in water > Speed of sound in air (Do you know why?)** **2. Speed of light in water < Speed of sound in air**

22.	**B**	**黎 Sir 提提你 :** **1. Like charges repel** **⇒ Both spheres may carry both positive or negative charges** **2. By $F = \frac{1}{4\pi\varepsilon_\circ}\frac{Q_1Q_2}{r^2}$ and By Netwon's 3rd law (Action-and-Reaction pair!)** **⇒ The electric forces are the same in magnitude on both spheres no matter what amount of charges the two spheres are.** **3. There are two forces acting on the upper spheres, which is the coulomb's force acting on the upper spheres by the lower sphere and the weight of the upper sphere.** ● **The upper sphere is at rest ⇒ $\frac{1}{4\pi\varepsilon_\circ}\frac{Q_1Q_2}{d^2} = mg \Rightarrow \uparrow m \Rightarrow \downarrow d$**

23.	**D**	**黎 Sir 提提你 :** **1. By** $E = \frac{1}{4\pi\varepsilon_o}\frac{+Q}{r^2} \Rightarrow E \ \alpha \ \frac{1}{r^2} \Rightarrow$ **E-field is inversely proportional to r.** **2. +Q is located on the on the negative side x = -d from the origin** $\Rightarrow$ **The curve of E-field tends to positive infinite value at x = d and gradually decreases to zero at x** $\rightarrow +\infty$

24.	**B**	**黎 Sir 提提你 :** **1. Let the resistance of each resistor be R.** **2. Equivalent resistance between X and Y = R/2 (Do you know why?)** **3. By Potential divider, Potential difference between X and Y** $= 9 \times \frac{R/2}{R + R/2}$ $= 3V$

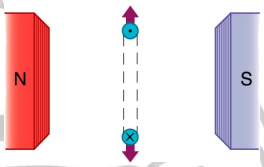
25.	D	黎 Sir 提提你 : 1. A fuse should be installed in the live wire. 2. Even with double insulation, a fuse is also required in an electrical appliance because if the current is too large, the fuse will be blown to make the circuit become open to protect the circuit. 3. A fuse rating > The value of operating Current slightly (Do you know why?) ● Power rating: '220 V, 1500 W' ⇒ Operating current = 6.82 A > 5A 4. Remarks: ● In Hong Kong, Earth wire must be installed in electric appliances with metal case while electric appliances with insulating case do not need earth wire. ⇒ Double insulation!  An AC Adapter with double insulation (left) and double insulation sign (right) ● In Hong Kong, however, a three-pin plug is a must. Therefore, electric appliances with double insulation will still have a plastic pin to pretend the earth wire to "fixed" the plug in its socket.

26. **A**

黎 Sir 提提你 :

1. The turning effect is zero when the coil is vertical.

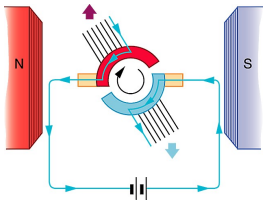
- **It is because the force acting on wire AB and CD is upward and downward respectively ⇒ The turning effect is zero.**



2. The magnetic force acting on BC is the same throughout the whole cycle since the direction of current is always perpendicular to the direction of the B-field.

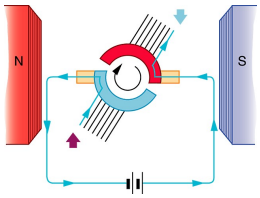
3. When the coil shoots past vertical due to inertia

⇒ Commutator changes contact from 1 brush to the other



⇒ Current in coil reverses

⇒ Magnetic Forces on coil reserve



⇒ The coil will keep rotation.

4. Remarks:

- **The turning effect will be the greatest when the coil is horizontal, not the force.**
- **When the coil is vertical, it can still rotate a little in the original direction by inertia.**

27.	B	黎 Sir 提提你 : **1. By Faraday's law of electromagnetic induction + Lenz' Law + Ohm's law:** ● **The magnitude of eddy current (induced current)** $I_e = \frac{\varepsilon}{R} = \frac{\Delta NBA}{\Delta t(R)}$ ● **Increase in the strength of the magnetic field** $\Rightarrow \uparrow B$ ● **Therefore,** $I_e = \frac{\varepsilon}{R} = \frac{\Delta NA(B\uparrow)}{\Delta t(R)} \Rightarrow I_e \uparrow$ **2. Reverse the current direction of the magnetic field only changes the direction of the eddy current.** **3. Applying the magnetic field over the whole metal disc** $\Rightarrow \frac{\Delta A}{\Delta t} = 0$ $\Rightarrow I_e = \frac{\varepsilon}{R} = \frac{\Delta NBA}{\Delta t(R)} = 0$ **(Do you know why?)** **4. Cut several slits from the metal disc** $\Rightarrow \frac{\Delta A}{\Delta t}\downarrow$ $\Rightarrow I_e \downarrow \ (\because \frac{\varepsilon}{R} = \frac{NB}{R}(\frac{\Delta A}{\Delta t}\downarrow)$

28. **C**

黎 Sir 提提你 :

1. When the metal rod PQ is moving to the right, By Lenz' law,

⇒ There should be induced current flow in a direction through the loop QPXY in an anti-clockwise direction to oppose the change in magnetic flux linkage causing it. (Do you know why?)

⇒ Current through R from X to Y.

2. By Faraday's law of electromagnetic induction + Ohm's law:

- The magnitude of induced current $I_e = \frac{\varepsilon}{R} = \frac{\Delta NBA}{\Delta t(R)} = \frac{(1)B[(v)(\Delta t)d]}{\Delta t(R)} = \frac{Bdv}{R}$ szd

29. **A**

黎 Sir 提提你 :

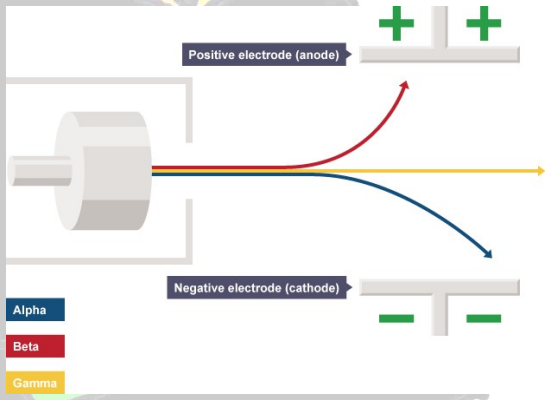
1. For main supply, which is a sinusoidal wave ⇒ $V_{r.m.s.} = \frac{V_{peak\ value}}{\sqrt{2}}$

- $110 = \frac{V_{peak\ value}}{\sqrt{2}} \Rightarrow I_{peak\ value} \approx 156\,V$

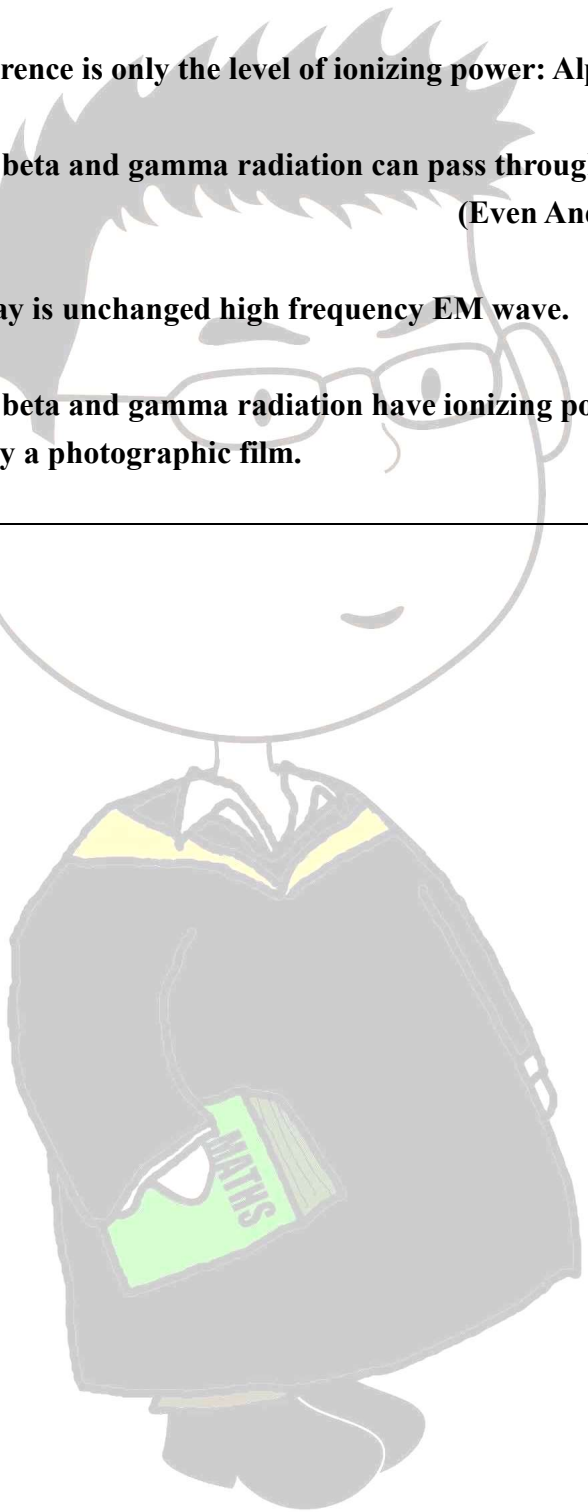
2. Average power dissipated by a a.c. heater = $\frac{V_{r.m.s.}}{R} = \frac{110^2}{100} = 121$ W

3. $V_{r.m.s.} \times 2$ ⇒ Average power will be 4 times (Do you know why?)

30.	D	黎 Sir 提提你 : 1. Rating of each light bulb ⇒ Operating Current = 1.5/3 = 0.5 A 2. Ten light bulb in parallel ⇒ Output current of the transformer = 5 A 3. Efficiency = 70% ⇒ Input power = 1.5 x 10 / 0.7 = 21.42857… W 4. Current from main supply = 21.42857… / 220 ≈ 0.097 A

31.	A	黎 Sir 提提你 : 1. Alpha particle is positive helium nucleus ⇒ Deflect to the negative plate 2. Beta particle is negative fast-moving electron ⇒ Deflect to the positive plate 3. Gamma ray is unchanged EM wave ⇒ Passing through straightly 4. Mass of alpha particle > Mass of beta particle ⇒ Less deflection !  Deflection in E-field

32.	**C**	**黎 Sir 提提你 :** **1. All alpha, beta and gamma radiation have ionizing power.** ● **The difference is only the level of ionizing power: Alpha > Beta > Gamma.** **2. All alpha, beta and gamma radiation can pass through vacuum !** **(Even Andy can do so!)** **3. Gamma ray is unchanged high frequency EM wave.** **4. All alpha, beta and gamma radiation have ionizing power and so can be detected by a photographic film.**



33.	B	黎 Sir 提提你 : 1. $^{238}_{92}U \rightarrow {}^{234}_{92}Th + {}^{4}_{2}He$ $\Rightarrow$ Alpha decay ! ● Alpha decay is a type of radioactive decay $\Rightarrow$ Radioactive decay is random and spontaneous in nature. ● Random: you cannot predict which nuclei is the next one to decay. ● Spontaneous: Rate of decay is independent of the environmental factors like temperature, humidity, etc. ● Therefore, there is no need a 10^7 K temperature to start the decay since it will happen spontaneous and randomly. 2. Energy released = Mass defect = 238.05079 – (234.04363 + 4.00260) = 4.56 u = 4.56 x 931 $\approx$ 4.25 MeV 3. All the released in the decay becomes both the kinetic energy of $^{4}_{2}He$ and $^{234}_{92}Th$, although the kinetic energy of $^{4}_{2}He$ share most of it. (Do you know why?)

The end.

黎 Sir 簡介 Andy Lai BEng CUHK, MIEEE

Mathematics 5**
Economics 5**
Physics 5**

- ✧ 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.
- ✧ 與學生面對新中學文憑試, 黎 Sir 親身上陣, 以實力於數學科, 物理科和經濟科奪取 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

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 44/45 總分.
- ✧ 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.
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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** Mathematics
5** Economics
5** Physics

- ✧ 畢業於香港中文大學，黎 Sir 教室創辦人之一.
- ✧ 超過 16 年教授 中學文憑 / IB Diploma / GCE / HSC / SAT / AP / GCSE / IGCSE / IB MYP 課程經驗.
- ✧ 與學生面對新中學文憑試, 黎 Sir 親身上陣, 於數學科, 物理科和經濟科奪取 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.

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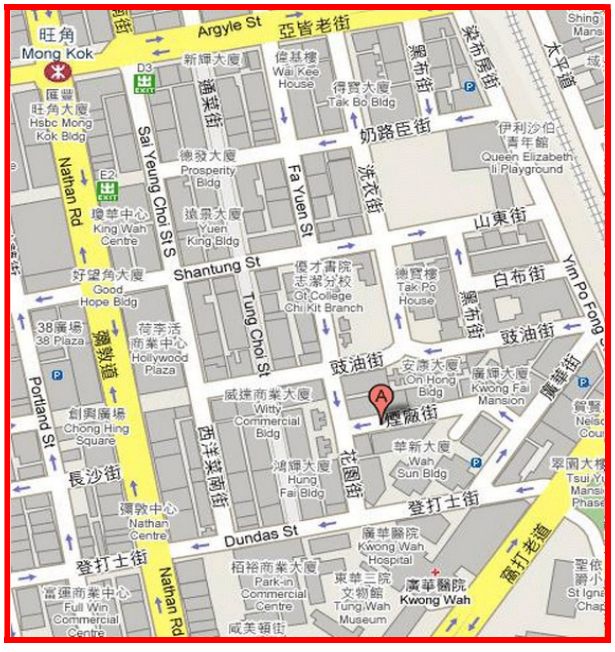

地鐵: 旺角 E2 出口，油麻地 A2 出口

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

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