NAME ______________________ CLASS 2T ______

Catholic Junior College
JC2 Preliminary Examination
Higher 1

PHYSICS 8867/1

Paper 1 Multiple Choice **12 September 2024**

1 hour

Additional Materials: Multiple Choice Answer Sheet

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, highlighters, glue or correction fluid.
Write your name and tutorial group on this cover page.
Write and/or shade your name, NRIC / FIN number and HT group on the Answer Sheet (OMR sheet), unless this has been done for you.

There are **thirty** questions on this paper. Answer **all** questions. For each question, there are four possible answers, **A, B, C** and **D**.
Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet (OMR sheet).

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
Any rough working should be done in this booklet.
The use of an approved scientific calculator is expected, where appropriate.

MARK SCHEME

Data

speed of light in free space,	c	=	3.00×10^{8} m s^{-1}
elementary charge,	e	=	1.60×10^{-19} C
unified atomic mass constant,	u	=	1.66×10^{-27} kg
rest mass of electron,	m_e	=	9.11×10^{-31} kg
rest mass of proton,	m_p	=	1.67×10^{-27} kg
the Avogadro constant,	N_A	=	6.02×10^{23} mol^{-1}
gravitational constant,	G	=	6.67×10^{-11} N m^{2} kg^{-2}
acceleration of free fall,	g	=	9.81 m s^{-2}

Formulae

uniformly accelerated motion,	s	=	$ut + \frac{1}{2}at^2$
	v^2	=	$u^2 + 2as$
resistors in series,	R	=	$R_1 + R_2 + \ldots$
resistors in parallel,	$1/R$	=	$1/R_1 + 1/R_2 + \ldots$

1	Which estimate is **not** realistic?	
	A	The power of a hair dryer is 150 W.
	B	The kinetic energy of a running man is 2000 J.
	C	The weight of a can of soft drink is 4 N.
	D	The density of ice is 900 kg m^{-3}.
L2	Answer: A Option A: Hair dryer uses a voltage of 240 V. If the power is 150 W, then the current is $\frac{\text{power}}{\text{voltage}} = \frac{150}{240} = 0.625\text{ A}$, which is a low current. The heating coils will not heat up properly. Option B: Assume the average mass of the running man as 70 kg and running at a speed of 8 m s^{-1}. K.E. of man = $\frac{1}{2}(70)\times(8)^2 = 2240\text{ J}$. Option C: The volume of a canned drink is approximately 330 ml ~ 400 g in mass. Weight of a can of soft drink = mg = 0.400 × 9.81 = 3.9 N ~ 4 N. Option D: Ice is less dense than water, which has a density of 1000 kg m^{-3}.	

2	Prefixes are often used to represent powers of 10 when writing the units of quantities. For example, 6.0 microampere, that is, 6.0 × 10^{-6} A, is written as 6.0 μA, where μ is the prefix symbol for 10^{-6} A. Which prefix is not one of the standard symbols?							
	A	g	**B**	p	**C**	m	**D**	T
L1	Answer: A Option B: p is a prefix that represents pico. Option C: m is a prefix that represents milli. Option D: T is a prefix that represents tera.							

3	To find the resistivity of a semi-conductor, a student makes the following measurements of a cylindrical rod of a material. length = (25 ± 1) mm diameter = (5.0 ± 0.1) mm resistance = (68 ± 1) Ω He calculates the resistivity to be (5.34 × 10^{-2}) Ω m. How should the uncertainty be included in the student's statement of the resistivity of the semi-conductor?	
	A	(5.34 ± 0.07) × 10^{-2} Ω m

	B	$(5.34 \pm 0.05) \times 10^{-2}\ \Omega$ m
	C	$(5.3 \pm 0.4) \times 10^{-2}\ \Omega$ m
	D	$(5.3 \pm 0.5) \times 10^{-2}\ \Omega$ m

L2 Answer: D

Let R be the resistance, A the area, L the length and d the diameter of the semi-conductor.

Resistivity $\rho = \dfrac{RA}{L} = \dfrac{R\left[\pi\left(\dfrac{d}{2}\right)^2\right]}{L} = \dfrac{\pi R d^2}{4L}$

$$\frac{\Delta\rho}{\rho} = \frac{\Delta R}{R} + 2\left(\frac{\Delta d}{d}\right) + \frac{\Delta L}{L}$$

$$= \frac{1}{68} + 2\left(\frac{0.1}{5.0}\right) + \frac{1}{25}$$

$$= 0.09471$$

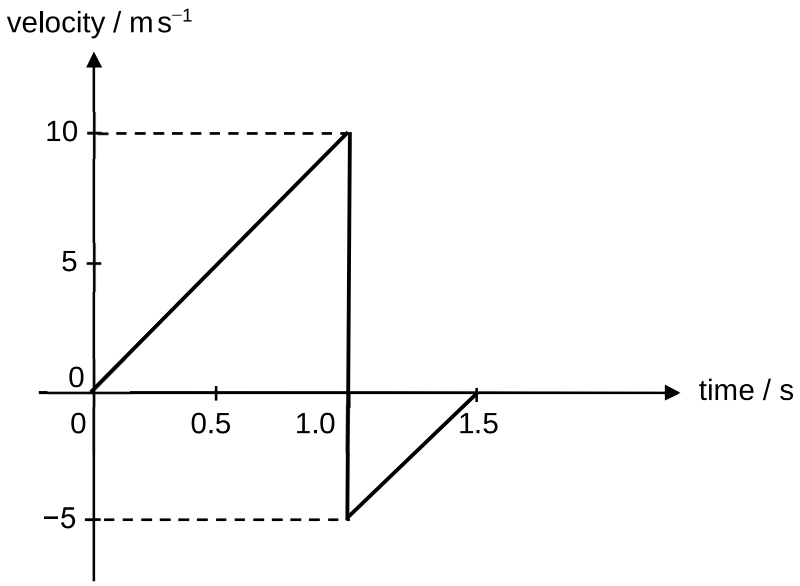
$$\Delta\rho = 0.09471 \times \left(5.34 \times 10^{-2}\right)$$

$$= 0.005\ \Omega\ \text{m}$$

$$= 0.5 \times 10^{-2}\ \Omega\ \text{m}$$

$$\Delta\rho = (5.3 \pm 0.5) \times 10^{-2}\ \Omega\text{m}$$

4 A ball is released from rest at time zero. After 1.0 s, it hits a horizontal surface and rebounds, reaching the top of its first bounce after 1.5 s.



What is the displacement of the ball from its original position after 1.5 s?

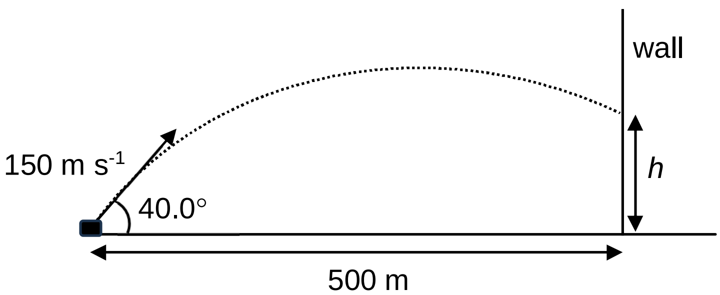
A	1.25 m	**B**	3.75 m	**C**	5.00 m	**D**	6.25 m

L2 Answer: B

Downward displacement of ball from the drop point = area under the graph from t = 0 s to t = 1.0 s $= \dfrac{1}{2} \times 1.0 \times 10 = 5.00$ m

	Upward displacement of ball from the surface when it reaches the top of its first bounce after 1.5 s = area under the graph from t = 1.0 s to t = 1.5 s $= \frac{1}{2} \times 0.5 \times 5 = 1.25$ m Displacement of the ball from its original position after 1.5 s = 5.00 m – 1.25 m = 3.75 m

5	A car travelling at speed u comes to a complete halt after a distance s when the driver applies a uniform braking force. A second car, travelling at speed 2u, comes to a halt when the driver applies a uniform braking force with twice the magnitude to that of the first car. You may ignore the reaction time of the driver. What is the distance, in terms of s for the second car to come to a halt?							
	A	0.5s	**B**	2s	**C**	3s	**D**	4s
L2	Answer: B Let v be the final velocity and a be the acceleration of the car. For the first car, $v^2 = u^2 + 2as$ $0 = u^2 + 2(-a)s$ $s = \frac{u^2}{2a}$ For the second car, $0 = (2u)^2 + 2(-2a)s_2$ $s_2 = \frac{(2u)^2}{2(2a)} = \frac{u^2}{a}$ $= 2s$							

6	A projectile is fired at an angle of 40.0° above the horizontal, and leaves the gun with a speed of 150 m s^{-1}. The projectile strikes a wall, which is 500 m away, at a vertical height of h.  Neglecting the effects of air resistance, what is the vertical height h?							
	A	96.4 m	**B**	327 m	**C**	420 m	**D**	512 m
L2	Answer: B							

	Let s_x be the horizontal displacement, u_x the initial horizontal velocity of the projectile and t be the time taken for the projectile to strike the wall. $s_x = u_x t$ $500 = (150\cos 40.0^0)t$ $t = \frac{500}{(150\cos 40.0^0)} = 4.3513576$ s Let s_y be the vertical displacement, a_x the vertical acceleration of the projectile and t be the time taken for the projectile to strike the wall. Taking upwards as positive, $s_y = u_y t + \frac{1}{2}a_y t^2 = (150\sin 40.0^0)(4.3513576) + \frac{1}{2}(-9.81)(4.3513576)^2$ $= 326.68$ m $s_y = h = 327$ m (3 s.f.)

7	Which of the following pairs of forces is **not** an example of Newton's third law of motion?	
	A	the force exerted on a man's feet by the floor and the weight of the man standing on the floor
	B	the forces of repulsion experienced by each of two parallel wires carrying currents in opposite directions
	C	the forces of attraction between an electron and a proton in a hydrogen atom
	D	the force of repulsion between an atom in the surface of a table and an atom in the surface of a book resting on the table
L1	Answer: A By Newton's third law of motion, the opposite reaction force to the force exerted on a man's feet by the floor is the force exerted on the floor by the man's feet.	

8	What happens to the apparent weight of an object falling freely in an elevator?	
	A	It becomes zero.
	B	It decreases.
	C	It increases.
	D	It remains the same.
L1	Answer: A When an object is inside a freely falling elevator, it is in a state of free fall along with the elevator. Both the elevator and the object inside the elevator are accelerating downwards at the same rate. As a result, the object experiences weightlessness, and its apparent weight becomes zero. This is because there is no normal force acting on the object to provide a sensation of weight.	

9	A football of mass 0.42 kg is travelling towards a player at 3.0 m s^{-1}. The player kicks the football with an impulse of 6.3 N s, returning it in the direction of approach. What is the new speed of the football?						
	A	3.3 m s^{-1}	**B**	5.0 m s^{-1}	**C**	12 m s^{-1}	**D**	18 m s^{-1}
L2	Answer: C Let *m* be the mass of the football, *v* the new speed and *u* the initial speed of the football. Impulse $= m(v-u)$ $6.3 = 0.42[v-(-3.0)]$ $15 = v + 3.0$ v = 12 m s^{-1}						

10	Which does **not** involve work being done by a force?	
	A	a bicycle free-wheeling downhill at a constant speed
	B	the charging of a car battery
	C	the motion of a spacecraft in deep space
	D	a man climbing up a flight of stairs
L2	Answer: C Option A: There is frictional force acting on the bicycle as well as displacement incurred for the bicycle. Option B: There are forces experienced by the moving charges against the resistance in the battery. Option C: There is absence of forces acting on the spacecraft in deep space. Option D: Force is applied to do work against the gravitational force for the man in climbing up the flight of stairs.	

11	A load of 6.0 N is placed on a spring that obeys Hooke's law, causing it to extend 3.0 cm. What additional elastic potential energy will be stored in the spring if it is extended by a further 10.0 cm?							
	A	0.49 J	**B**	0.91 J	**C**	1.6 J	**D**	1.8 J
L2	Answer: C $F = kx$ $k = \frac{F}{x} = \frac{6.0}{0.03} = 200$ N m^{-1}							

Additional elastic potential energy = $\frac{1}{2}(200)(0.13)^2 - \frac{1}{2}(200)(0.03)^2$

= 1.6 J

12 A car of mass 1500 kg is accelerated from rest to a speed of 100 km h^{-1} on level ground.

Given that the time taken is 12.1 s, what is the maximum power delivered by the engine?

A	1.72 kW	**B**	47.8 kW	**C**	95.7 kW	**D**	620 kW

L2 Answer: B

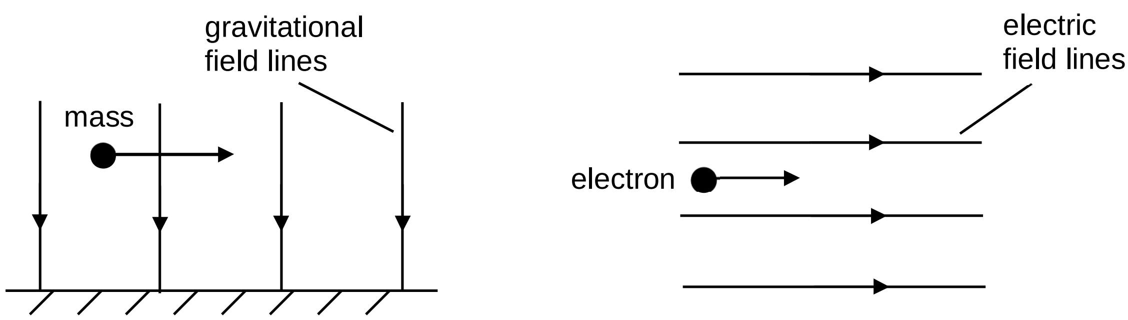
$$\text{Power} = \frac{\text{Work done}}{\text{time}} = \frac{\text{Gain in K.E.}}{\text{time}}$$

$$= \frac{\frac{1}{2} \times 1500 \times \left(\frac{100 \times 10^3}{3600}\right)^2}{12.1}$$

= 47.826 kW

= 47.8 kW (3 s.f.)

13 A mass is initially travelling at right angles to the Earth's uniform gravitational field, and an electron is initially travelling parallel to a uniform electric field, as shown.

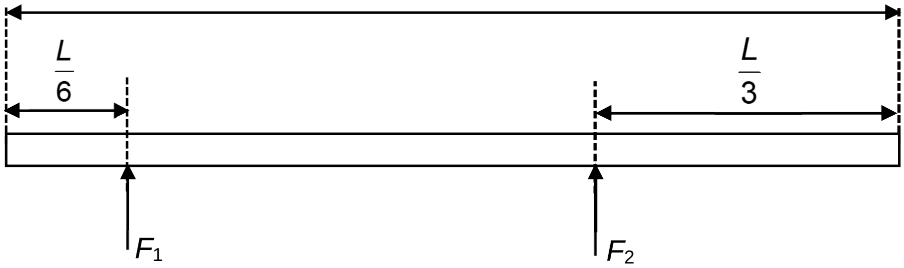


What is the direction of the gravitational force and the electric force experienced by the particles respectively?

	gravitational force on mass	electric force on electron
A	↓	↓
B	→	→
C	↓	→
D	↓	←

L1	Answer: D Gravitational force always acts in the direction of the gravitational field, while the electric force on a negatively charged electron acts in the direction opposite to the electric field.

14	A heavy uniform plank of length L is supported by two forces F_1 and F_2 at points of distances $\frac{L}{6}$ and $\frac{L}{3}$ from its ends as shown.							
	A	0.5	B	1.0	C	2.0	D	4.0



What is the value of $\frac{F_1}{F_2}$?

L2 Answer: A

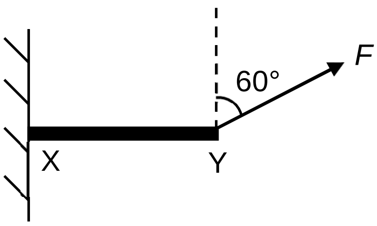
By principle of moments;
Sum of clockwise moment must be equal to the sum of anti-clockwise moment;
Taking moments about the centre of gravity of the plank;

$$F_1\left(\frac{3L}{6}-\frac{L}{6}\right)=F_2\left(\frac{3L}{6}-\frac{2L}{6}\right)$$

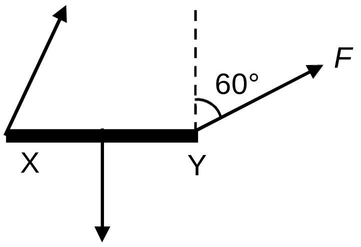
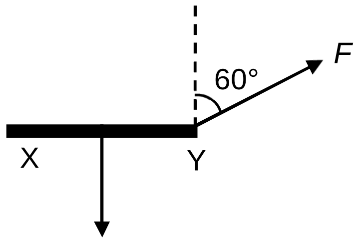
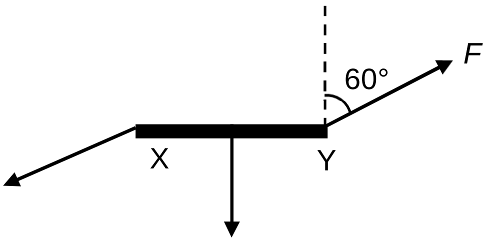
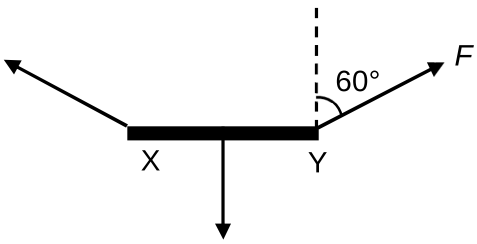
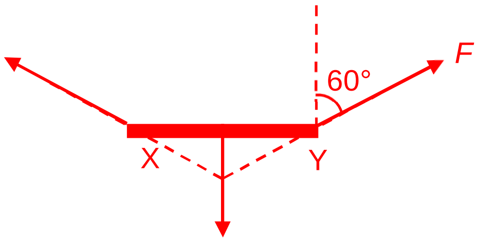
$$\frac{F_1}{F_2}=\frac{\frac{L}{6}}{\frac{2L}{6}}$$

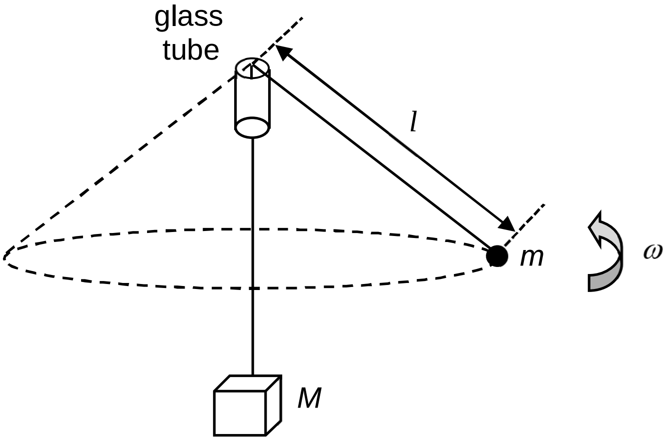
$$=\frac{1}{2}=0.5$$

15 A uniform rod XY is freely hinged to a wall at X. It is held horizontally by a force F acting from Y at an angle of 60° to the vertical as shown.



Which of the following best shows the correct free body diagram of all the forces acting on the rod?

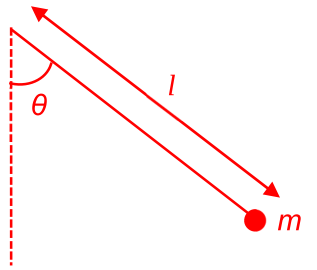
	A	B
		
	C	**D**
		
L2	Answer: D  Since the rod XY is in equilibrium, the three forces acting on the rod are concurrent as shown.	

16	A small marble of mass m is tied to a rectangular block of mass M with an inextensible string as shown in the figure below. The marble is swung in the horizontal plane in circular motion with a constant angular velocity of ω. The string is passed through a smooth vertical glass tube so that the length l of the string from the top of the glass tube to the marble can vary freely as the angular velocity changes. 

	What is the ratio of $\frac{m}{M}$ when mass M is stationary?							
	A	$\frac{\omega^2}{gl}$	**B**	$\frac{g}{\omega^2 l}$	**C**	$g\omega^2 l$	**D**	$2g\omega^2 l$

L3 Answer: B

Let tension in the string be T, angle of portion of string of length l with the vertical be θ.



For the small marble,

$T\sin\theta = m\omega^2(l\sin\theta)$

$T = m\omega^2 l$

For the rectangular block,

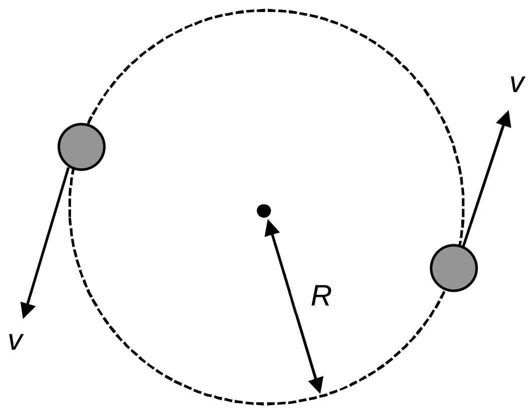
$T = Mg$

When rectangular block is stationary,

$Mg = m\omega^2 l$

$\frac{m}{M} = \frac{g}{\omega^2 l}$

17 Two planets of equal mass M are rotating at constant speed v, and constant angular velocity ω in a circular orbit. The radius of the orbit is R as shown in the diagram below.



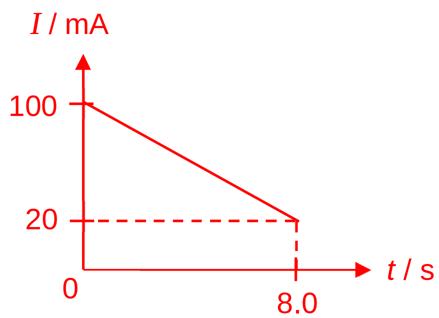
Which expression gives the resultant force acting on each planet?

A	$\frac{Mv^2}{2GR}$	**B**	$\frac{2Mv^2}{GR}$	**C**	$\frac{GM^2v^2}{\omega^2}$	**D**	$\frac{GM^2\omega^2}{4v^2}$

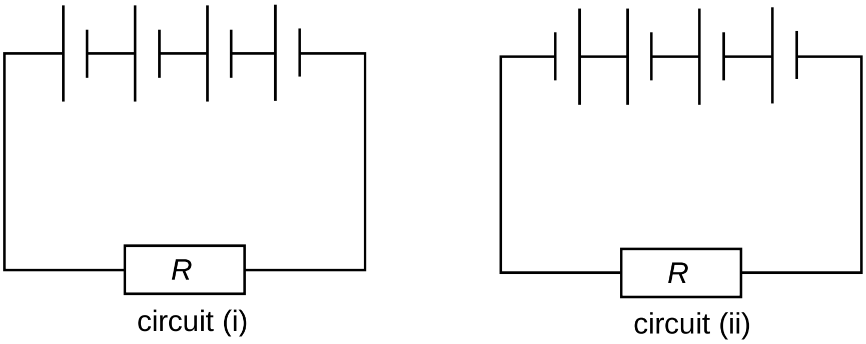
L2 Answer: D

	Let r be the distance between the two planets. By Newton's law of gravitation, $F = \frac{GMM}{r^2}$ $F = \frac{GMM}{(2R)^2} = \frac{GM^2}{4R^2}$ Since $v = R\omega$, $R = \frac{v}{\omega}$. Therefore, $F = \frac{GM^2}{4\left(\frac{v}{\omega}\right)^2} = \frac{GM^2}{\frac{4v^2}{\omega^2}}$ $= \frac{GM^2\omega^2}{4v^2}$

18	Which of the following quantities is **not** necessarily the same for all geostationary satellites orbiting around the Earth?	
	A	angular velocity
	B	centripetal acceleration
	C	kinetic energy
	D	orbital period
L2	Answer: C All geostationary satellites have the same orbital period (24 hours). Hence, they have the same angular velocity, $\omega = \frac{2\pi}{T}$. Geostationary satellites have the same orbital radius. Hence, they have the same centripetal acceleration, $a = r\omega^2$. Kinetic energy of the satellite depends on the mass of the satellite and is not necessarily the same for all geostationary satellites.	

19	The current in a component is reduced uniformly from 100 mA to 20 mA over a period of 8.0 s. What is the amount of charge that flows during this time?							
	A	160 mC	**B**	320 mC	**C**	480 mC	**D**	640 mC
L3	Answer: C 							

	Charge that flows during this time = $\frac{1}{2}(100+20)(10^{-3})(8.0)$ = 480 mC

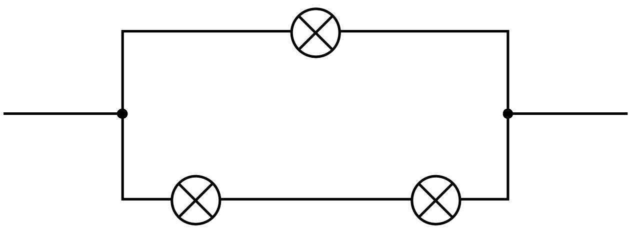
20	The given diagrams show two circuits of four identical cells each of e.m.f. 1.5 V and of constant internal resistance 1.0 Ω connected in series with a resistor *R* of resistance 2.0 Ω.  Which of the following is the value of $\frac{\text{power in } R \text{ in circuit (i)}}{\text{power in } R \text{ in circuit (ii)}}$?						
	A	1.0	**B**	2.0	**C**	3.0	**D** 4.0
L3	Answer: D Current in circuit (i) $I_i = \frac{1.5+1.5+1.5+1.5}{1.0+1.0+1.0+1.0+2.0}$ = 1.0 A Current in circuit (ii) $I_{ii} = \frac{1.5+1.5+1.5-1.5}{1.0+1.0+1.0+1.0+2.0}$ = 0.50 A For the same *R*, $\frac{P_{\text{circuit (i)}}}{P_{\text{circuit (ii)}}} = \frac{(1.0)^2 R}{(0.50)^2 R}$ = 4.0						

21	The resistance of a piece of pure silicon falls rapidly as the temperature rises because	
	A	the total number of charge carriers increases with temperature.
	B	the ratio of positive to negative charge carriers increases.
	C	the ratio of positive to negative charge carriers decreases.
	D	the charge carriers can move more easily at higher temperatures.
L2	Answer: A	

The amplitude of vibration of the atomic cores increases so that the drifting electrons make more frequent collisions with the atomic cores and as such the mean drift speed decreases. This has an increasing effect on the silicon's resistance. However, concurrently, the number of charge carriers per unit volume increases exponentially. Hence conductivity of the silicon increases; the resistance decreases.

The increased effect on the silicon's resistance is less than the decrease in the silicon's resistance. The overall effect is a decrease in resistance.

22 In the diagram below, three identical bulbs are connected to form a circuit. The maximum power produced by a single bulb is 10 W.



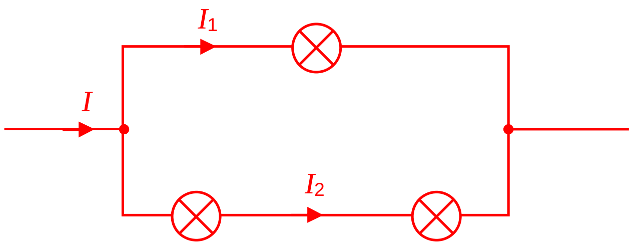
Assume that the resistance of the bulbs remains constant when lighted up.

What is the total maximum power that can be attained in this circuit such that all bulbs are lighted up?

A	10 W	**B**	15 W	**C**	20 W	**D**	30 W

L3 Answer: B

Maximum power for circuit can be attained when the single bulb is at maximum power.

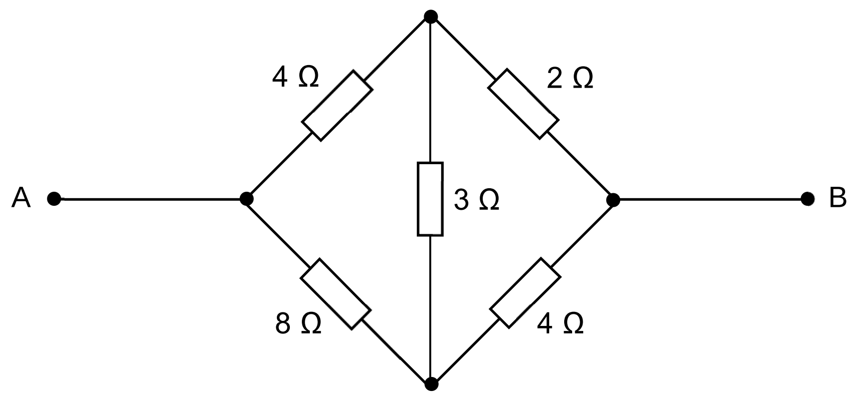


$$I_2 = \frac{1}{2} I_1$$

Hence the power for each bulb on the lower branch will be $\frac{1}{4}$ maximum power. The power for each bulb is 2.5 W.

Maximum power for circuit = 10 + 2.5 + 2.5 = 15 W.

23	The diagram below shows the arrangement of five resistors.



What is the effective resistance between the two points A and B?

A	1.7 Ω	**B**	2.6 Ω	**C**	4.0 Ω	**D**	7.0 Ω

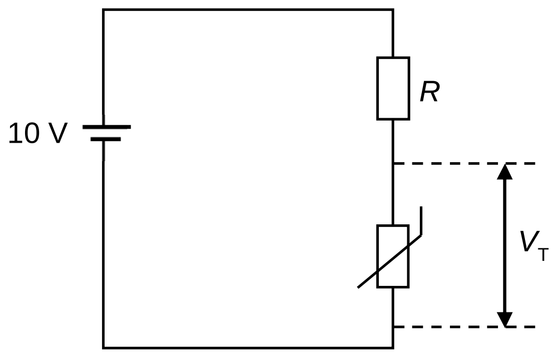
L3 Answer: C

Since the potential difference across the 3 Ω resistor is zero,

$$\frac{1}{R_{\text{effective}}} = \left(\frac{1}{4+2}\right) + \left(\frac{1}{8+4}\right)$$

$R_{\text{effective}} = 4.0\ \Omega$

24	A thermistor is connected in series with a fixed resistor of resistance *R* and a cell of e.m.f. 10 V, as shown in the diagram below.



When the temperature of the thermistor is 20 °C, its resistance is 5.3 Ω and the potential difference V_T across it is 4.5 V.

What is the value of V_T if the temperature of the thermistor increases to 60 °C and the resistance drops to 3.1 Ω?

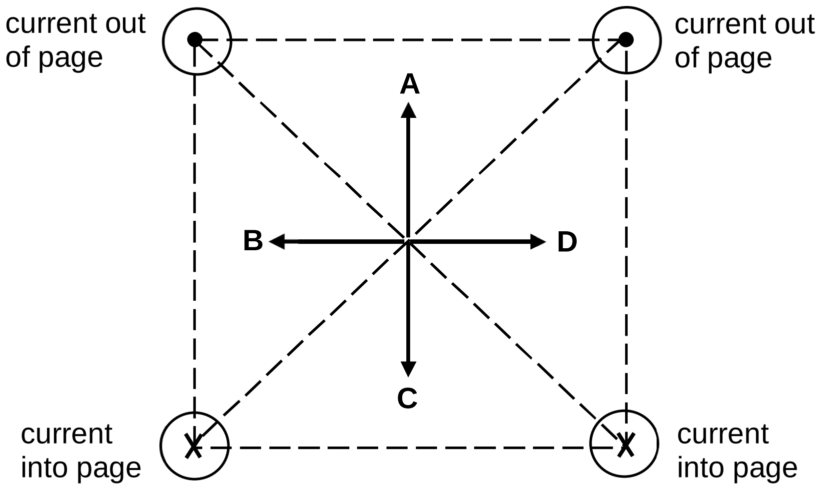
A	1.5 V	**B**	2.6 V	**C**	3.2 V	**D**	3.5 V

L2 Answer: C

When the temperature of thermistor is 20 ^{0}C,

$$\left(\frac{5.3}{R+5.3}\right) \times 10 = 4.5$$

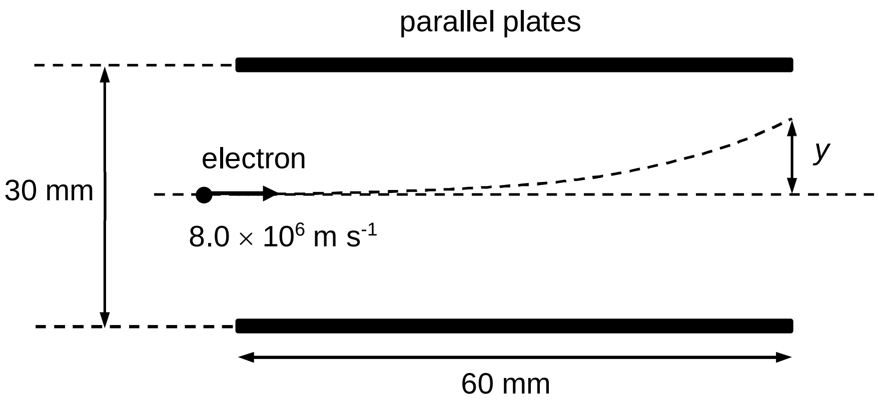
	R = 6.478 Ω When the temperature of thermistor is 60 ^{0}C, $V_T = \left(\dfrac{3.1}{6.478+3.1}\right)\times 10$ = 3.237 V = 3.2 V (2 s.f.)

25	The figure below shows four parallel conductors arranged at the vertices of a square. Each conductor carries equal current in the directions as indicated.  Conductor Z which is parallel to the other four conductors, is placed at the centre of the square. If conductor Z carries current flowing into the page, which of the arrows **A**, **B**, **C** or **D** indicates the direction of the force experienced by conductor Z?
L2	Answer: C Conductors carrying current in opposite directions repel each other. Conductors carrying current in the same directions attract each other. Therefore, conductor Z experiences a resultant force in the direction of C.

26	An electron is moving along the axis of a solenoid carrying a current. Which of the following is a correct statement about the electromagnetic force acting on the electron?	
	A	The force acts radially inwards.
	B	The force acts radially outwards.
	C	The force acts in the direction of motion.
	D	No force acts.

L2	Answer: D The direction of magnetic field of a solenoid is along the axis of the solenoid. Since the electron is moving along the axis, the direction of the current is along the axis. Hence, there is no electromagnetic force acting on the electron.

27 A uniform electric field is set up between two parallel plates of length 60 mm and spaced 30 mm apart. A potential difference V is applied between the two plates. An electron is projected horizontally into the electric field with a speed of 8.0×10^6 m s^{-1}. The vertical displacement y of the electron when it exits the parallel plates is 7.6 mm.



What is the potential difference V which is applied between the two plates?

A	10 V	**B**	18 V	**C**	32 V	**D**	46 V

L3 Answer: D

Let t be the time taken for the electron to travel a horizontal distance of 60 mm, s_x the horizontal displacement, s_y the vertical displacement, u_x the horizontal speed, u_y the vertical speed of the electron, a_y the vertical acceleration of the electron.

$$t = \frac{s_x}{u_x} = \frac{0.060}{8.0 \times 10^6} = 7.5 \times 10^{-9}\ \text{s}$$

$$y = u_y t + \frac{1}{2} a_y t^2$$

$$0.0076 = 0 + \frac{1}{2}(a_y)(7.5 \times 10^{-9})^2$$

$a_y = 2.702222 \times 10^{14}$ m s^{-2}

$$a_y = \frac{F}{m} = \frac{qE}{m}$$

$$2.702222 \times 10^{14} = \frac{(1.6 \times 10^{-19})(E)}{9.11 \times 10^{-31}}$$

$E = 1538.5778$ V m^{-1}

$$E = \frac{\Delta V}{d}$$

$$1538.5778 = \frac{V}{0.030}$$

$V = 46.16$ V
$= 46$ V (2 s.f.)

28	A parent nucleus, initially at rest, decays into two particles of masses m_1 and m_2, moving away from each other in opposite directions. If E is the total energy of the two particles, what is the energy associated with the particle of mass m_1?

	A	$\left(\frac{m_1}{m_2}\right)E$	B	$\left(\frac{m_2}{m_1}\right)E$	C	$\left(\frac{m_1}{m_1+m_2}\right)E$	D	$\left(\frac{m_2}{m_1+m_2}\right)E$

L2 Answer: D

Let v_1 be the final velocity of m_1 and v_2 be the final velocity of m_2.
By conservation of momentum, $0 = m_1v_1 - m_2v_2$

$m_1v_1 = m_2v_2$

$\frac{v_1}{v_2} = \frac{m_2}{m_1}$ --------------- (1)

Energy of m_1: $E_1 = \frac{1}{2}m_1{v_1}^2$ --------------- (2)

Energy of m_2: $E_2 = \frac{1}{2}m_2{v_2}^2$ --------------- (3)

$E = E_1 + E_2$

Divide eqn (2) by eqn (3): $\frac{E_1}{E_2} = \frac{m_1{v_1}^2}{m_2{v_2}^2} = \left(\frac{m_1}{m_2}\right)\left(\frac{m_2}{m_1}\right)^2 = \frac{m_2}{m_1}$

Therefore, $\frac{E_1}{E - E_1} = \frac{m_2}{m_1}$

$E_1m_1 = Em_2 - E_1m_2$

$E_1(m_1 + m_2) = Em_2$

$E_1 = \left(\frac{m_2}{m_1+m_2}\right)E$

29 $^{232}_{90}\text{Th}$ decays via a series of α, β, and γ decays to the stable isotope $^{208}_{82}\text{Pb}$.

Which row describes what can be deduced about the numbers of each decay type?

	number of α decays	number of β decays	number of γ decays
A	6	4	cannot tell
B	6	cannot tell	4
C	cannot tell	6	6
D	cannot tell	cannot tell	cannot tell

L2 Answer: A

The nucleon number drops by 24 from 232 to 208, which indicates that 6 α-particles must have been emitted.

	The proton number would have dropped by 12 from 90 to 78. However, the final proton number is 82, which means 4 β particles must also have been emitted. γ particles are electromagnetic photons. Therefore, it is not possible to tell how many photons are emitted in the process.

30	A radioactive isotope has a half life of 8 hours. A detector placed near the radioactive isotope records a count-rate of 500 counts per minute. The average background count-rate is 35 per minute. What will be the reading recorded by the detector after one day has passed?							
	A	58.1	**B**	93.1	**C**	150	**D**	250
L2	Answer: B Count rate without the background count = 500 – 35 = 465 counts per minute. Since the radioactive isotope has a half life of 8 hours, three half lives will have elapsed in a day. Count rate without background count after 1 day = $\left(\frac{1}{2}\right)^3 \times 465 = 58.125$ Reading recorded by the detector after 1 day = 58.125 + 35 = 93.125 = 93.1							

-- END OF PAPER 1 --

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