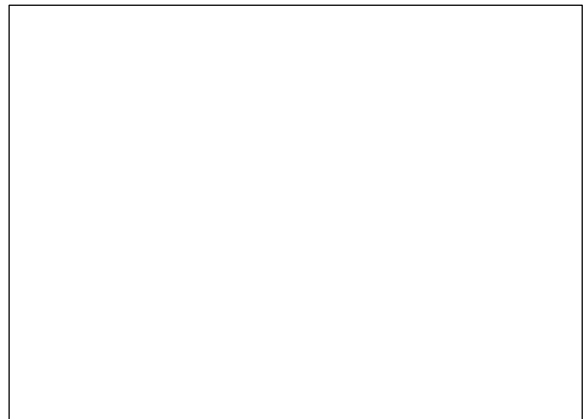




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mind. PROVE IT!!*

PHYSICS Workshop 2020



PART 3

Paper 3

Kertas 2 (Paper 2)

1. A professional baseball team trains their players by allowing them to go through hitting the ball drills that are ejected from a spring system in two initial state of compression as shown in Diagram 9.1 and Diagram 9.2. Both two springs have the same initial length. *Kumpulan bola lisut profesional telah melatih pemainnya dengan membenarkan mereka menghentam bola yang dilepaskan dari sistem spring dalam dua keadaan mampatan awal seperti yang ditunjukkan dalam Rajah 9.1 dan Rajah 9.2. Kedua-dua spring mempunyai panjang awal yang sama.*

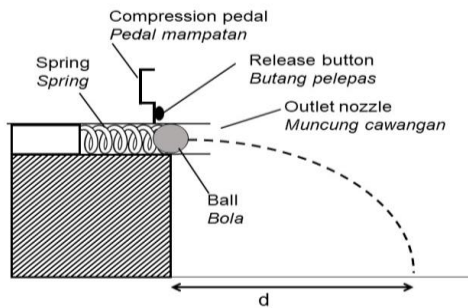


Diagram 9.1/ Rajah 9.1

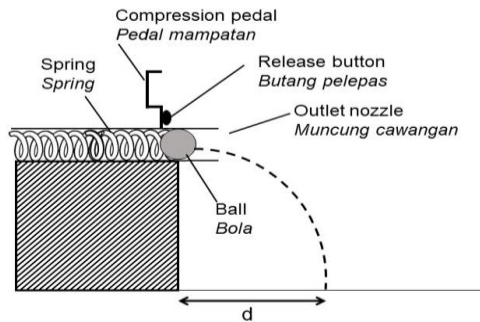


Diagram 9.2/ Rajah 9.2

A compression pedal are used to compress the spring. The target ball is then placed beside the compression spring. The release button will releases the compressed spring and the ball is ejected with a high speed for the base players to hit. *Pedal mampatan digunakan untuk memampatkan spring. Bola sasaran diletakkan bersebelahan dengan spring termampat. Butang pelepas akan melepaskan spring termampat dan bola dilepaskan dengan halaju tinggi supaya pemain boleh menghentam bola tersebut*

b) Based on Diagram 9.1 and Diagram 9.2, *Berdasarkan Rajah 9.1 dan Rajah 9.2,* i) compare the elastic potential energy in the spring, the speed of the ball after being ejected and the distance travelled, d by the ball after ejection.

bandingkan tenaga keupayaan kenyal dalam spring, halaju bola apabila dilepaskan dan jarak yang dilalui, d oleh bola apabila dilepaskan.

ii) relate the elastic potential energy in the spring with the speed of the ball after being ejected to make a deduction regarding the relationship between the distance travelled, d by the ball after ejection and the speed of the ball after being ejected.



hubungkaitkan tenaga keupayaan kenyal dalam spring dengan halaju bola apabila dilepaskan untuk membuat satu kesimpulan berkaitan hubungan antara jarak yang dilalui, d oleh bola selepas dilepaskan dengan halaju bola apabila dilepaskan.

[5 marks/ 5 markah]

2) Diagram 10.2 shows a potential difference, V , against, electric current, I graph for electrical components, which are, a filament lamp and a constantan wire conductor.

Rajah 10.2 menunjukkan satu graf beza keupayaan, V , melawan arus elektrik, I , bagi dua komponen elektrik, iaitu, lampu filamen dan konduktor wayar konstantan.

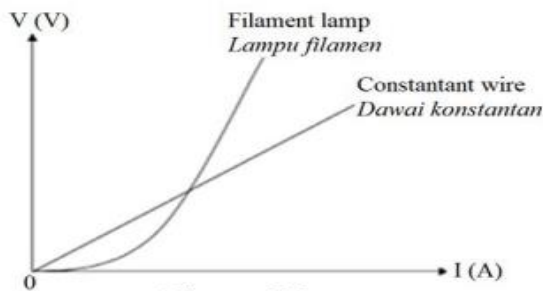


Diagram 10.2
Rajah 10.2

Based on Diagram 10.2, compare the shape of the graphs, the gradient of the graphs and the resistance of the filament lamp and the constantan wire conductor. Relate the shape of the graph and the resistance of the electrical components to make a deduction on which of the conductor is an Ohmic conductor. [5 marks]

Berdasarkan Rajah 10.2, bandingkan bentuk graf, kecerunan graf, dan rintangan lampu filamen dan konduktor wayar konstantan. Hubungkan bentuk graf dengan rintangan komponen elektrik untuk membuat deduksi berkenaan konduktor ialah konduktor Ohmic [5 markah]

PART 4

1.



Magnifying lamp
Lampu pembesar

Diagram 11.1
Rajah 11.1

Diagram 11.1 shows a technician using a magnifying lamp to help him repairing a circuit board. The magnifying lamp uses a lens to magnify the image of the circuit.

Rajah 11.1 menunjukkan seorang juru teknik menggunakan lampu pembesar untuk membantunya memperbaiki sebuah papan litar. Lampu pembesar itu menggunakan sebuah kanta untuk memperbesarkan imej litar itu.

By using a diagram, explain how the image is formed. In your explanation, state the characteristics of the image.

Dengan menggunakan rajah, terangkan bagaimana imej terbentuk. Dalam penerangan anda, nyatakan ciri-ciri imej itu. [4 marks]

2.

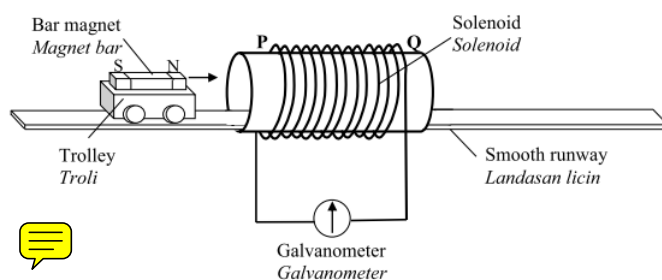


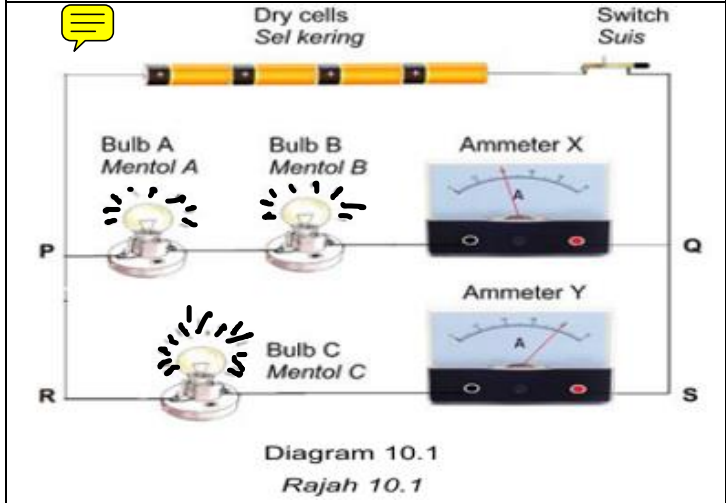
Diagram / Rajah 10.3

Diagram 10.3 shows a bar magnet attached on a trolley. The trolley moves with a constant velocity on a smooth runway into a solenoid which is connected to a galvanometer.

Rajah 10.3 menunjukkan satu magnet bar yang diletakkan di atas satu troli. Troli itu bergerak dengan satu halaju malar di atas landasan licin ke dalam satu solenoid yang bersambung kepada galvanometer.

What happens to the pointer of galvanometer when the trolley moves into the solenoid? Explain your answer.

Apakah yang berlaku ke atas penunjuk galvanometer apabila troli bergerak ke dalam solenoid? Terangkan jawapan anda. [4 marks / markah]



3.

Diagram 10. 1 shows an electrical circuit consist of three identical bulbs. Two bulbs and an ammeter are placed across PQ. A bulb and an ammeter are placed across RS. Assume the internal resistance of the dry cells is zero. *Rajah 10.1 menunjukkan litar elektrik mengandungi tiga mentol yang serupa. Dua mentol dan ammeter diletakkan merentasi PQ. Satu mentol dan ammeter diletakkan merentasi RS. Anggap rintangan dalam sel kering adalah sifar.*

A piece of copper wire is connected across Bulb B in Diagram 10.1. *Seutas dawai kuprum disambung merentasi Mentol B dalam Rajah 10.1.*

Explain what happens to the ammeter readings and brightness of the bulbs. *Terangkan apakah yang berlaku kepada bacaan ammeter dan kecerahan mentol.* [4 marks]

4.

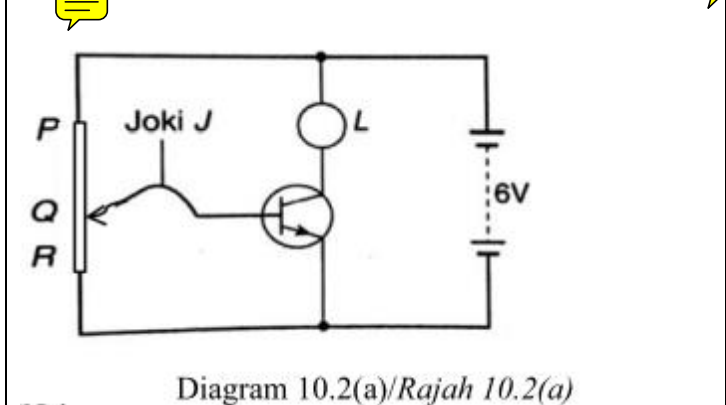
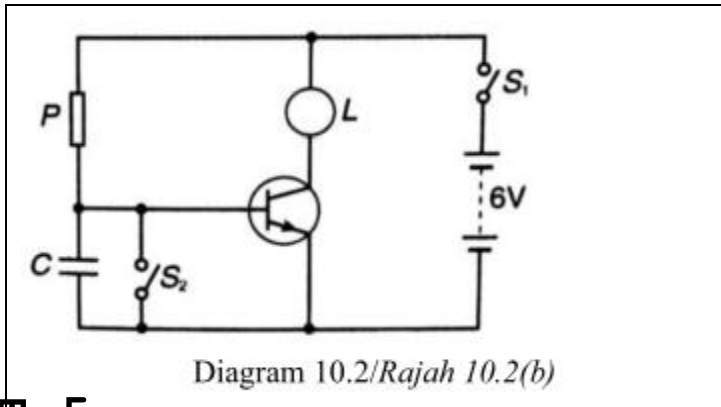


Diagram 10.2(a) show a transistor circuit. PQR is a resistance wire, J is a jockey and L is a lamp with label 6V,6W. When the jockey J is touched at Q, the lamp, L light up with normal brightness. *Rajah 10.2(a) menunjukkan satu litar transistor. PQR ialah satu dawai perintang, J ialah sebatang joki dan L ialah sebuah lampu berlabel 6V,6W. Apabila joki J berada di Q, lampu L menyala dengan kecerahan normal.*

(i) What happen to the bulb when jockey J is moved to position R? Give your reason. *Apa yang akan berlaku kepada mentol apabila joki J digerakkan ke kedudukan R? Berikan alasan anda.* [2 Mark/2Markah]

(ii) Circuit in diagram 10.2(a) is changed to diagram 10.2(b), where C is an uncharged capacitor. Explain your observation when only switch S 1 is closed. *Litar pada rajah 10.2(a) diubah kepada rajah 10.2(b), di mana C ialah sebuah*



kapasitor yang belum dicaskan. Terangkan pemerhatian anda apabila hanya suis S 1 sahaja ditutup? [2 Marks/2Markah]

PART 5

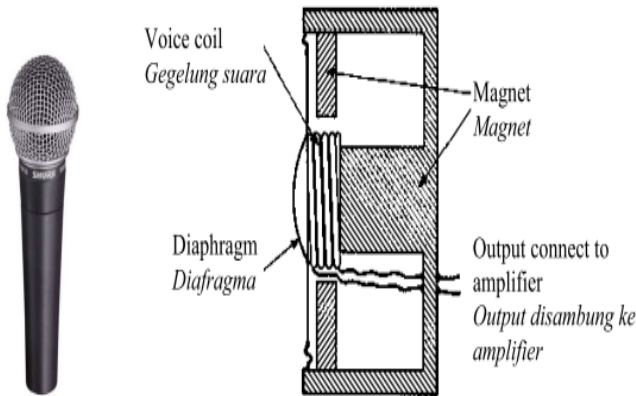


Diagram 10.4 shows a moving coil microphone and its cross-section. Moving coil microphone converts the sound energy to electrical energy based on electromagnetic induction.

When a person speaks through the microphone, the diaphragm and voice coil vibrate. The coils move in and out from the magnet to produce a small alternating current at the frequency of the sound.

Rajah 10.4 menunjukkan satu mikrofon gegelung bergerak dan keratan rentasnya. Mikrofon gegelung bergerak menukarkan tenaga bunyi kepada tenaga elektrik berdasarkan aruhan elektromagnet.

Apabila seseorang bercakap melalui mikrofon, diafragma dan gegelung bergetar. Gegelung suara bergerak ke dalam dan ke luar magnet untuk menghasilkan satu arus elektrik ulang-alik yang kecil pada frekuensi bunyi.

Suggest and explain how to improve the moving coil microphone so that it can function effectively and generate a greater electric current based on the characteristics of the thickness and elasticity of diaphragm, the voice coil and the strength of magnet.

Cadang dan terangkan bagaimana untuk menambah baik mikrofon gegelung bergerak itu supaya ia dapat berfungsi dengan berkesan dan menghasilkan arus elektrik yang lebih besar berdasarkan ciri-ciri ketebalan dan kekenyalan diafragma, gegelung suara dan kekuatan magnet.

[10 marks]

Characteristics	Explanation
1.	
2.	
3.	

4.

5.

2.

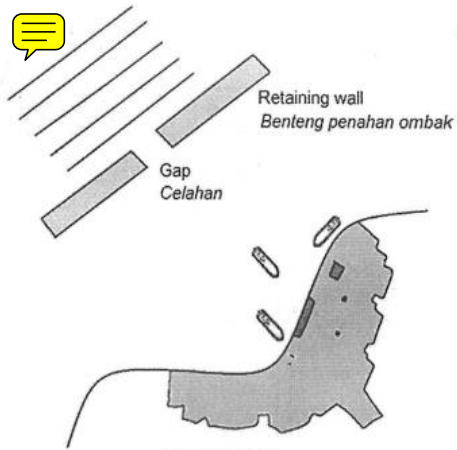


Diagram 10.4
Rajah 10.4

Diagram 10.4 shows the water wave moves toward a retaining wall near the harbour. *Rajah 10.4 menunjukkan gelombang air bergerak menuju ke benteng penahan ombak dekat dengan pelabuhan.*

The design of the retaining wall in Diagram 10.4 is not suitable to protect the harbour from erosion due to high amplitude of water waves. Suggest and explain how to improve the retaining wall to reduce erosion on the surface of the wall, height of the wall, shape of the wall and size and number of the gap. *Rekabentuk dinding pemecah ombak pada Rajah 10.4 tidak sesuai untuk melindungi pelabuhan daripada hakisan disebabkan oleh amplitud ombak yang besar. Cadang dan terangkan bagaimana untuk meningkatkan dinding pemecah dalam mengurangkan hakisan melalui permukaan benteng, ketinggian benteng, bentuk benteng, saiz dan bilangan celah.* [10 marks]

Characteristics	Explanation
1.	
2.	
3.	
4.	
5.	

3.

Diagram shows a bicycle pump which takes longer time to inflate the bicycle tyres.
Rajah menunjukkan sebuah pam basikal yang mengambil masa yang lama untuk mengembungkan tayar basikal.



Using appropriate physics concepts, explain the usage of suitable parts to design the most convenience safety pump that ready to pump whenever it is needed.

Guna konsep fizik yang sesuai, terangkan penggunaan bahagian yang sesuai untuk merekabentuk pam basikal yang paling memudahkan dan selamat untuk digunakan bila-bila diperlukan. [10 marks]



PART 6

Essay Part C.

1. Table A shows the characteristic of four designs of the aeroplane wings.
Jadual A menunjukkan ciri-ciri bagi empat rekabentuk sayap kapal terbang.

Wing Sayap	Shape of cross section of wing <i>Bentuk keratan rentas sayap</i>	Area of wing <i>Keluasan sayap</i> / m ²	Density of wing material <i>Ketumpatan bahan sayap</i> / kgm ⁻³	Difference in speed of air above and below the wing <i>Perbezaan laju udara di antara bahagian atas dan bawah sayap</i> / ms ⁻¹
W	 	38.0	2400	10.0
X		39.7	2300	21.8
Y		60.5	2000	20.0
Z		40.5	2050	15.5

Table A/ *Jadual A*

Study the characteristics of all four design of aeroplane wings.

Explain the suitability of each characteristic and determine the most suitable wing to be mounted with the body of the aeroplane.

Give reasons for your choice.

Kaji ciri-ciri bagi keempat-empat rekabentuk sayap kapal terbang tersebut.

Terangkan kesesuaian setiap ciri dan tentukan sayap yang paling sesuai untuk dipasang bersama badan kapal terbang tersebut.

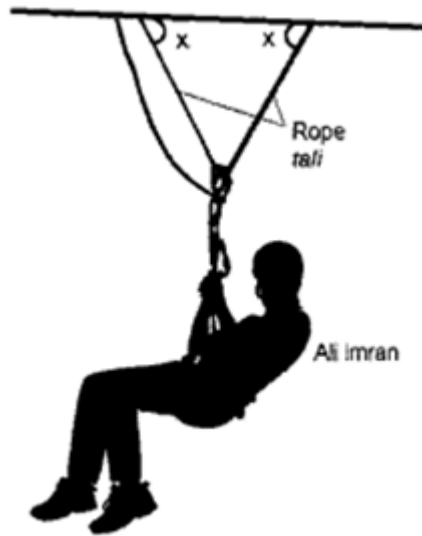
Beri sebab untuk pilihan anda.

[10 marks]

[10 markah]

Characteristics	Explanation
1.	
2.	
3.	
4.	
5.	

2. Diagram shows two ropes supporting Ali Imran during a flying fox activity.
Rajah menunjukkan dua utas tali yang menyokong Ali Imran semasa aktiviti 'flying fox'.



You are required to investigate the characteristics of the rope as shown in Table B below.
Anda dikehendaki menyiasat ciri-ciri tali seperti ditunjukkan dalam Jadual B di bawah.





Rope Tali	Maximum tension of the rope/ N <i>Tegangan maksimum tali / N</i>	Material of the rope <i>Bahan tali</i>	Angle X <i>Sudut X</i>	Rate of the heat expansion of the rope <i>Kadar pengembangan haba dalam tali</i>
R	300	 Nylon <i>Nilon</i>	Low <i>Rendah</i>	2400
S	500	 Nylon <i>Nilon</i>	High <i>Tinggi</i>	2300
T	500	 Coconut husk fibre <i>Sabut kelapa</i>	Low <i>Rendah</i>	2000
U	300	 Coconut husk fibre <i>Sabut kelapa</i>	High <i>Tinggi</i>	2050

Table B / *Jadual B*

Study the characteristics of all four characteristic of the rope.

Determine the most suitable rope which can support a heavy man for a longer time.

Give reasons for your choice.

Kaji ciri-ciri bagi keempat-empat rekabentuk ciri pada tali.

Tentukan tali yang paling sesuai untuk menyokong seorang lelaki yang berat dalam masa yang lama. Beri sebab untuk pilihan anda.

[10 marks]

Characteristics	Explanation
1.	
2.	
3.	
4.	
5.	

Paper 2 Part B

1. Definition – don't state the formula of the define word
 - Write the definition in statement from the formula
2. Comparison questions – must use back the same diagram to compare in physics term comparison. Quote back the Diagram number, and compare with statement according to the marks provision.
3. Explanation on aspects given.
 Must quote back the aspect given, don't divert the statement by explaining other statement of your ways.
 Explain the characteristics of the statement given follow (1 marks) with explanation of the benefit and advantages of the characteristics stated. (1 marks)
 More explanation are better, usually TWO are more than enough.

Part C

1. Usually calculation, and definition.
 Please state formula, working and final results with minimum 2 decimal places and correct units.
2. Explanation of physics concepts, usually test your understanding of physics formula relationships.
3. Study specification on the aspects given and evaluate the pictures given to extract the answer from the information given. Quote the information of point of answer and elaborate the statement of characteristics with physics concept explanation.
4. Try to give TWO explanation of each characteristics in a statement. (4 points with 4 explanation) – 8 marks
5. Final 2 marks is the explanation of the BEST suitability and CHOOSE the BEST of the 4 or 5 given examples.
6. This characteristics and explanation can states in a table form. (THE BEST EVER ESSAY for 10 marks)
7. Choose the best essay than you can get the MOST marks.
8. Essay in Part B and Part C is usually ONE form 4 and ONE form 5. So DON'T SPOT QUESTION. Study all the physics concept.