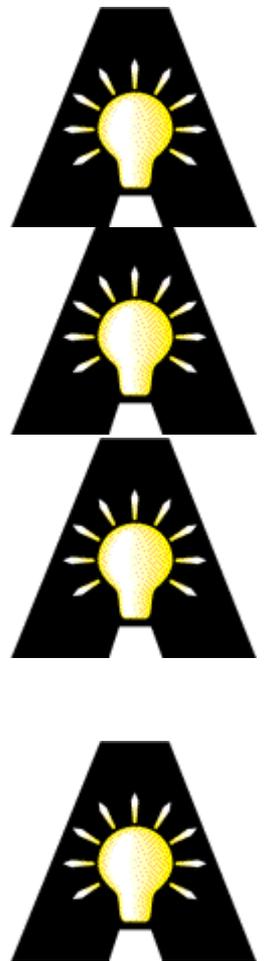


# *Physics Workshop*

*2016*

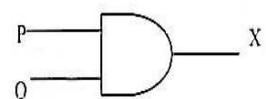
# *SMK BB SERI*

# *PETALING*



*Success is depend on your mind and your will.*

**You are the one, who decide it. PROVE IT!!**



### Tips for Paper 3 No 1 and No 2

1. Identify the variable from the text and diagram.
  - (a) Manipulated variable
  - (b) Responding variable
  - (c) Fixed variable (can be measured)  
---NOT TYPE OF SUBSTANCE
  - (d) Observe the diagram measurement
  - (e) Identify the value in table
  - (f) Tabulate data with symbol and unit
  - (g) Plan your graph (unit and symbol)
  - (h) Determine the relationship from the graph
2. Read the question CAREFULLY
  - (a) Extrapolate the graph and write the value next to it
  - (b) Plot biggest triangle and get closest value with unit
  - (c) Substitute the value correctly with 2 decimal places
  - (d) Place precaution
    - Observe the reading perpendicular to the eyes to prevent parallax errors
    - Off the circuit when measurement is not taken to prevent heating of wires and cause systematic errors
    - Repeat the experiment for 3 times and determine the average to prevent systematic error
3. Tips Paper 3 no 3 and 4.
  - (a) Planning experiment is the BEST to do and EASY to score but it is also easy to differ from the main point.
  - (b) Identify variables from the questions from the statement, CIRCLE UP the variables involve and APPARATUS GIVEN in statement.
  - (c) Think what ???? experiment is using given apparatus as a HINTS. Plan and sketch the diagram of experiment step up.
  - (d) Write inference, hypothesis and aim FOLLOW FORMAT given.

### Underline the variables of MV and RV from the diagram. Use the variables to substitute the format of Planning Experiment.

#### Procedure

1. State the initial measurement of MV.
2. State the ways of measurement of RV with apparatus and follow with formula (if necessary)
3. Repeat the experiment with 4 different MV values. a<sub>1</sub>,a<sub>2</sub>,a<sub>3</sub> and a<sub>4</sub>.

#### 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.

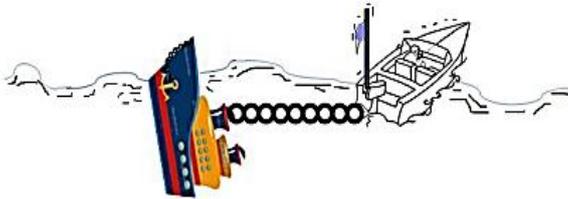
### Planning Experiment

#### 1.

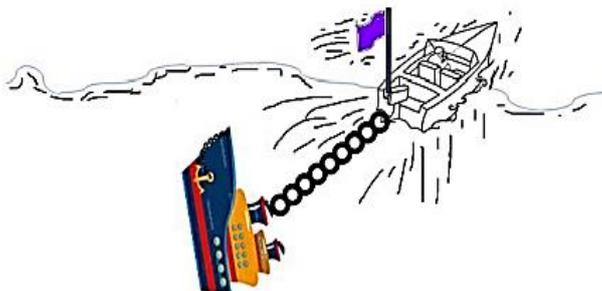
Diagram 3.1 shows a worker driving a boat for towing a shipwreck in the middle of the ocean. He found it is difficult to bring the ships that partially immersed towards the beach quickly.

Rajah 3.2 menunjukkan pekerja itu memandu bot yang sama menunda sebuah kapal karam di tengah lautan. Dia mendapati mudah untuk menunda kapal yang tenggelam sepenuhnya ke tepi pantai.

Diagram 3.2 shows the worker driving the same boat towing a shipwreck in the middle of the ocean. He found that it is easy to bring the ship that fully immersed towards the beach.



Rajah 3.1  
Diagram 3.1



Based on the diagrams below,

- (a) make **one** suitable inference .
- (b) state **one** appropriate hypothesis that could be investigated.
- (c) describe how you would design an experiment to test your hypothesis

In your explanation, state clearly the following :

- (i) aim of the experiment
- (ii) variables in the experiment
- (iii) list of apparatus and materials
- (iv) arrangement of the apparatus
- (v) the procedures of the experiment, which includes the method of controlling the manipulated variable and the method of measuring the responding variable
- (vi) the way you would tabulate the data
- (vii) the way you would analyse the data

- (c) Dengan menggunakan radas seperti benang, bikar, neraca spring dan lain-lain radas, terangkan satu rangka kerja eksperimen untuk menyiasat hipotesis yang anda nyatakan di 3(b).

*With the use of apparatus such as a thread, beaker, spring balance and other apparatus, describe an experiment framework to investigate the hypothesis stated in 3(b).*

2. Diagram 4.1 show a lamp which lights up with normal brightness when the dimmer knob is set at its minimum value. Diagram 4.2 shows the lamp dimmer when the dimmer knob is set at its maximum value.

With the use of apparatus such as constantan wire, voltmeter and other apparatus, describe an experiment to investigate the hypothesis stated.

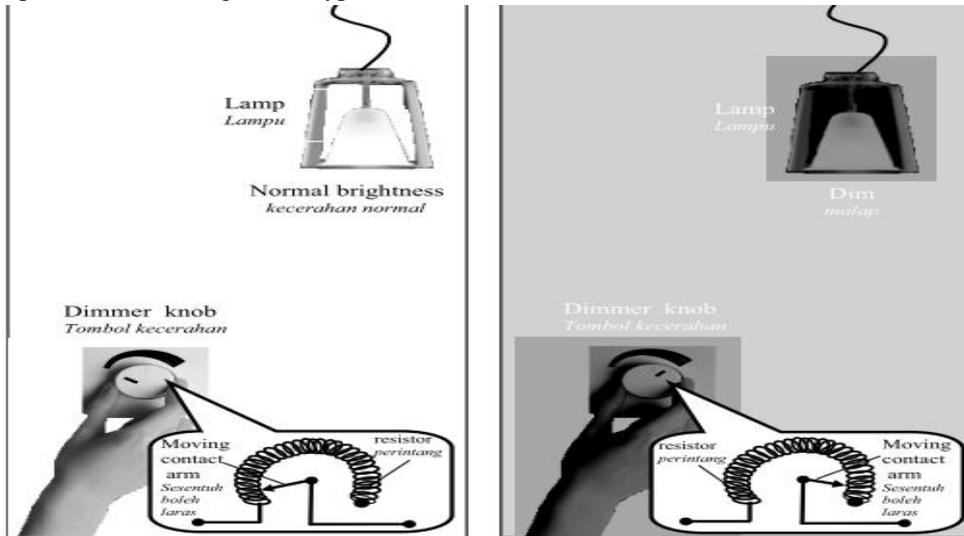


Diagram 4.1

Diagram 4.2

- 3.

Diagram 3.1 shows a half glass of hot coffee that is left for ten minutes. Diagram 3.2 shows a full glass of similar hot coffee that is left for the same time. It is notice that the hot coffee in Diagram 3.1 cools down faster than Diagram 3.2.

Rajah 3.1 menunjukkan separuh gelas air kopi panas yang dibiarkan sejuk selama sepuluh minit. Rajah 3.2 menunjukkan segelas air kopi yang sama yang juga dibiarkan sejuk dalam tempoh masa yang sama. Didapati bahawa air kopi dalam Rajah 3.1 lebih cepat menyejuk daripada Rajah 3.2.

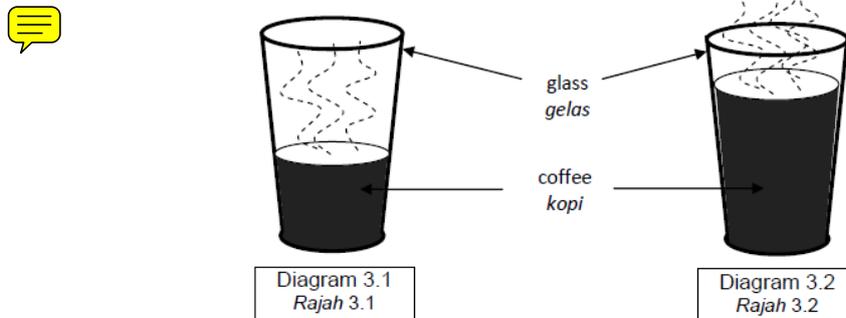


Diagram 3.1  
Rajah 3.1

Diagram 3.2  
Rajah 3.2

With the use of apparatus such as immersion heater, beaker and other apparatus, describe an experiment framework to investigate the hypothesis stated in 3(b).

4. Diagram 7.1 shows a transistor circuit with a bulb  $L$ .

Rajah 7.1 menunjukkan sebuah litar bertransistor dengan sebiji mentol  $L$

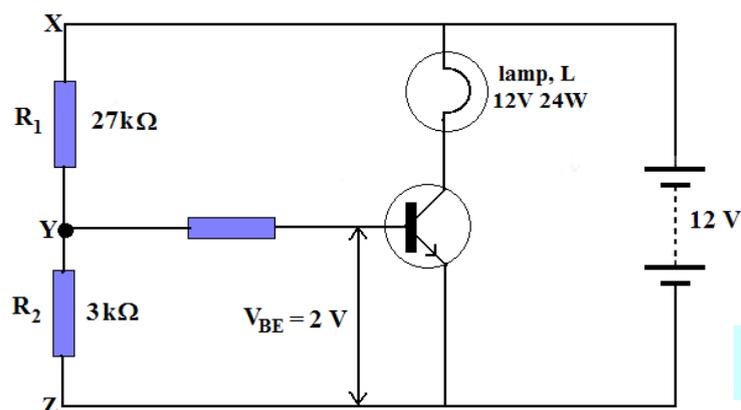


DIAGRAM 7.1

- (a) Name the type of transistor shown in Diagram 7.1.  
*Namakan jenis transistor yang ditunjukkan pada Rajah 7.1* [1 mark]



.....

- (b) Based on Diagram 7.1: *Berdasarkan pada Rajah 7.1:*  
(i) What is the potential difference across point X and point Z?  
*Berapakah beza keupayaan merentasi titik X dan titik Z?* [1 mark]



.....

- (ii) What is the total resistance between point X and point Z?  
*Berapakah jumlah rintangan di antara titik X dan titik Z?* [1 mark]



.....

- (iii) Using the answers from (b)(i) and b(ii), calculate the potential difference across YZ.  
*Menggunakan jawapan dari (b)(i) dan (b)(ii), hitungkan beza keupayaan merentasi YZ.*



[2 marks]

- (c) State what will happen to the lamp, L, if the base-emitter potential difference,  $V_{BE}$  is 2 volts? Explain your answer.  
*Nyatakan apakah yang berlaku pada mentol, L, jika beza keupayaan tapak pengeluar,  $V_{BE}$  ialah 2 volt? Jelaskan jawapan anda.* [2 marks]



.....

.....

- (d) Without adding any new component to Diagram 7.1, what modification is needed so that the opposite situation than the one in 7(c) occur at lamp L.  
*Tanpa menambah sebarang komponen baru kepada Rajah 7.1, apakah pengubahsuaian yang harus dilakukan untuk menghasilkan keadaan yang bertentangan dengan 7(c) pada mentol L.* [1 mark]



.....

- (e) An automatic fire alarm is needed to emit sound in case of fire. Suggest **two** modifications that have to be made to the circuit in Diagram 7.1 by replacing the components with suitable electronic components.  
*Suatu penggera automatic diperlukan bagi menghasilkan bunyi jika berlaku kebakaran. Cadangkan **dua** pengubahsuaian yang perlu dilakukan pada litar Rajah 7.1 dengan menggantikan komponen kepada komponen elektronik yang sesuai.* [2 marks]



5. The transmission of electricity over the National Grid Network uses high voltage cables. You are assigned to study the characteristics of cables which could be used as transmission cable. Table 12 shows the characteristics of four transmission cables.

*Penghantaran tenaga elektrik melalui Rangkaian Grid Nasional menggunakan kabel yang mempunyai voltan yang tinggi. Anda diminta untuk mengkaji ciri-ciri kabel yang sesuai digunakan sebagai kabel penghantaran.. Jadual 12 menunjukkan ciri-ciri bagi 4 jenis kabel penghantaran.*

Cable	Resistivity / $\Omega\text{m}^{-1}$	Density / $\text{kg m}^{-3}$	Cost	Rate of thermal expansion
P	$3.0 \times 10^{-7}$	$5 \times 10^5$	Low	High
Q	$1.8 \times 10^{-8}$	$2 \times 10^3$	Medium	Low
R	$7.5 \times 10^{-7}$	$8 \times 10^2$	High	Medium
S	$7.0 \times 10^{-8}$	$4 \times 10^3$	Medium	High

TABLE 12



Based on the table 12 ;Berdasarkan jadual 12;

- (i) Explain the suitability of the characteristics of the cables to be used as transmission cable.

*Jelaskan ciri-ciri kabel yang sesuai dijadikan kabel penghantaran.*

- (ii) Determine the most suitable transmission cable to be used and give reasons for your choice.

*Tentukan kabel yang paling sesuai digunakan sebagai kabel penghantaran dan beri sebab atas pilihan anda. [10 marks]*

- 6.

Diagram 10.1 show copper wire coils connected to the ammeters, rheostats, switches and direct current power supply are placed between two magnet magnet.  
Rajah 10.1 menunjukkan gelung dawai kuprum disambungkan kepada ammeter, rheostat, suis dan bekalan kuasa arus terus diletakkan di antara dua magnet magnadur.

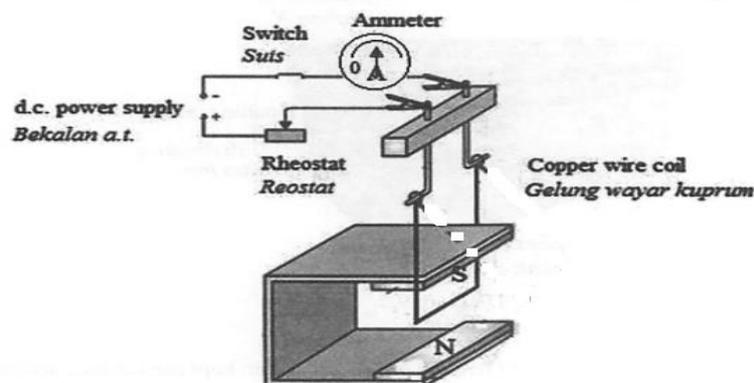


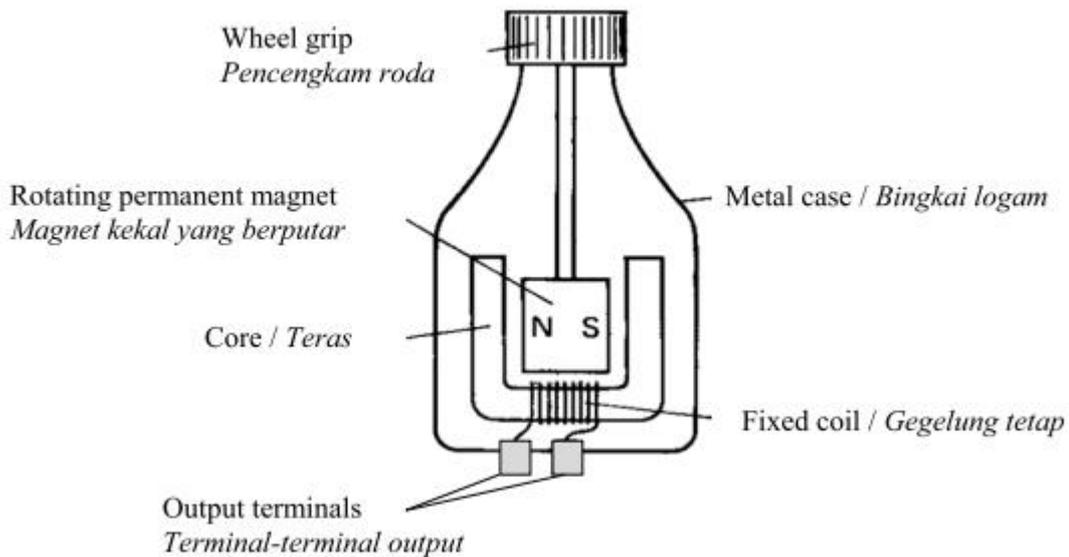
Diagram 10.1  
Rajah 10.1

- (c) Explain why the copper wire coil swing upwards when the switch is on.  
*Terangkan mengapa gelung dawai kuprum berayun keatas apabila suis dihidupkan.*

[4 marks]



7.



- (c) You are required to give some suggestions to design a dynamo that can produce a bigger induced current. Based on Diagram 10.3, and using appropriate concepts of physics, explain your suggestions based on the following aspects:

*Anda dikehendaki memberi beberapa cadangan untuk mereka bentuk sebuah dinamo yang boleh menghasilkan arus aruhan yang lebih besar. Berdasarkan Rajah 10.3, dan menggunakan konsep fizik yang sesuai, terangkan cadangan anda berdasarkan aspek-aspek berikut:*

- (i) Type of core / Jenis teras
- (ii) Thickness of the coil wire / Ketebalan dawai gegelung
- (iii) Strength of the magnet / Kekuatan magnet
- (iv) Diameter of the wheel grip / Diameter pencengkam roda
- (v) Number of turns of the coil / Bilangan lilitan gegelung [10 marks] / [10 markah]

8.

Diagram 10.3 shows a shadow is formed on the fluorescent screen of a Maltese Cross Tube.

*Rajah 10.3 menunjukkan satu bayang terbentuk pada skrin berpendaflour Tiub Palang Maltese.*

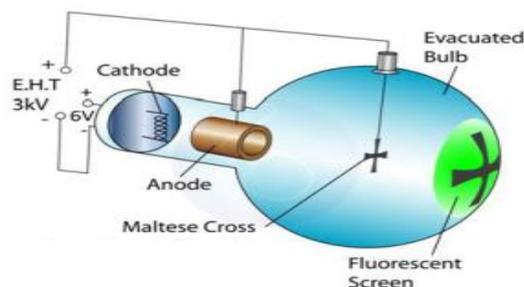


Diagram 10.3  
Rajah 10.3

Explain how the shadow produced by the cathode ray on the fluorescent screen.  
*Terangkan bagaimana bayang terbentuk oleh sinar katod tersebut pada skrin berpendaflour.*

[4 marks]  
[4 markah]

(a) make **one** suitable inference .

The \_\_\_\_\_ is depend on the \_\_\_\_\_

(b) state **one** appropriate hypothesis

The higher the \_\_\_\_\_, the \_\_\_\_\_ the \_\_\_\_\_

(viii) aim of the experiment  
to determine the relationship between \_\_\_\_\_ and \_\_\_\_\_

(ix) variables in the experiment  
MV \_\_\_\_\_

RV \_\_\_\_\_

CV \_\_\_\_\_

(x) list of apparatus and materials  
(From list given and use to measure RV and MV with controlling the motion)

\_\_\_\_\_

(xi) arrangement of the apparatus  
(diagram with label)

(xii) the procedures of the experiment

i. method of controlling the manipulated variable (**initial data**)

\_\_\_\_\_

ii. method of measuring the responding variable (use what and how to measure )

\_\_\_\_\_

\_\_\_\_\_

iii. repeat with 4 difference value

\_\_\_\_\_

(xiii) the way of tabulate data

MV, symbol and unit	RV, symbol and unit

(xiv) the way you would analyse the data

(xv) analyse the data

(b) symbol and unit

