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Provincial Department of Education – NWP

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Third Term Test - Grade 13 - 2023

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# Physics - II

03 hours

Additional Reading Time 10 mn

Index No. : .....

**Important :**

- ※ *This question paper consists of* **16** *pages.*
- ※ *This question paper comprises of* ***two*** *parts, Part* **A** *and Part* **B.** *The time allotted for* ***both parts*** *is* ***three hours.***
- ※ *Use of calculators is* ***not*** *allowed.*

**PART A — Structured Essay :**
**( pages 2 - 8)**

*Answer* ***all*** *the questions on this paper itself. Write your answers in the space provided for each question. Note that the space provided is sufficient for your answers and that extensive answers are not expected.*

**PART B — Essay :**
**( pages 9 - 16)**

*This part contains* ***six*** *questions, of which,* ***four*** *are to be answered. Use the papers supplied for this purpose.*

- ※ *At the end of the time allotted for this paper, tie the* ***two parts together*** *so that* ***Part A*** *is* ***on top*** *of* ***Part B*** *before handing them over to the Supervisor.*
- ※ *You are permitted to remove* ***only Part B*** *of the question paper from the Examination Hall.*

**For Examiners' Use Only**

| For the second paper | | |
|---|---|---|
| **Part** | **Question Nos.** | **Marks Awarded** |
| A | 1 | |
| | 2 | |
| | 3 | |
| | 4 | |
| B | 5 | |
| | 6 | |
| | 7 | |
| | 8 | |
| | 9 (A) | |
| | 9 (B) | |
| | 10 (A) | |
| | 10 (B) | |
| Total | | |

**Final Marks**

| | |
|---|---|
| In numbers | |
| In words | |

**Code Numbers**

| | |
|---|---|
| Marking Examiner 1 | |
| Marking Examiner 2 | |
| Marks checked by | |
| Supervised by | |

PART – A Structural Paper

*Answer All four questions on this paper itself*

(Acceleration due to gravity , g = 10Nkg$^{-1}$)

01. Following set up shows to find density of liquid by using weighted test tube.

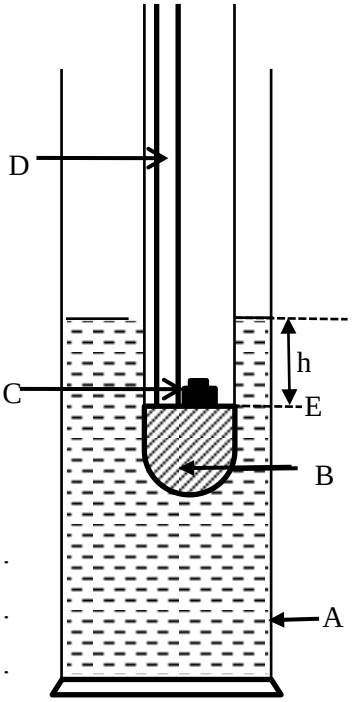
a) Name the following item given in letters

A ……

B……..

C……..

D……..




b) Consider volume of the part B is V, mass of the tube with its contents M, external cross sectional area of the tube is **a**, mass of additional weights insert into the tube is m, density of the liquid is d, height of the liquid column above the E level is h.

i. Write down the principle using here

……

……

……

……

……..

ii. What is the reason measuring the height h from E level

……

iii. How to make the part B

……

……

……..

iv. What is the benefit of part B

……...

c) i. Write down the expressions for equilibrium of tube using above data.

……

ii. Re arrange the above equation to find the density of d using graphical method.

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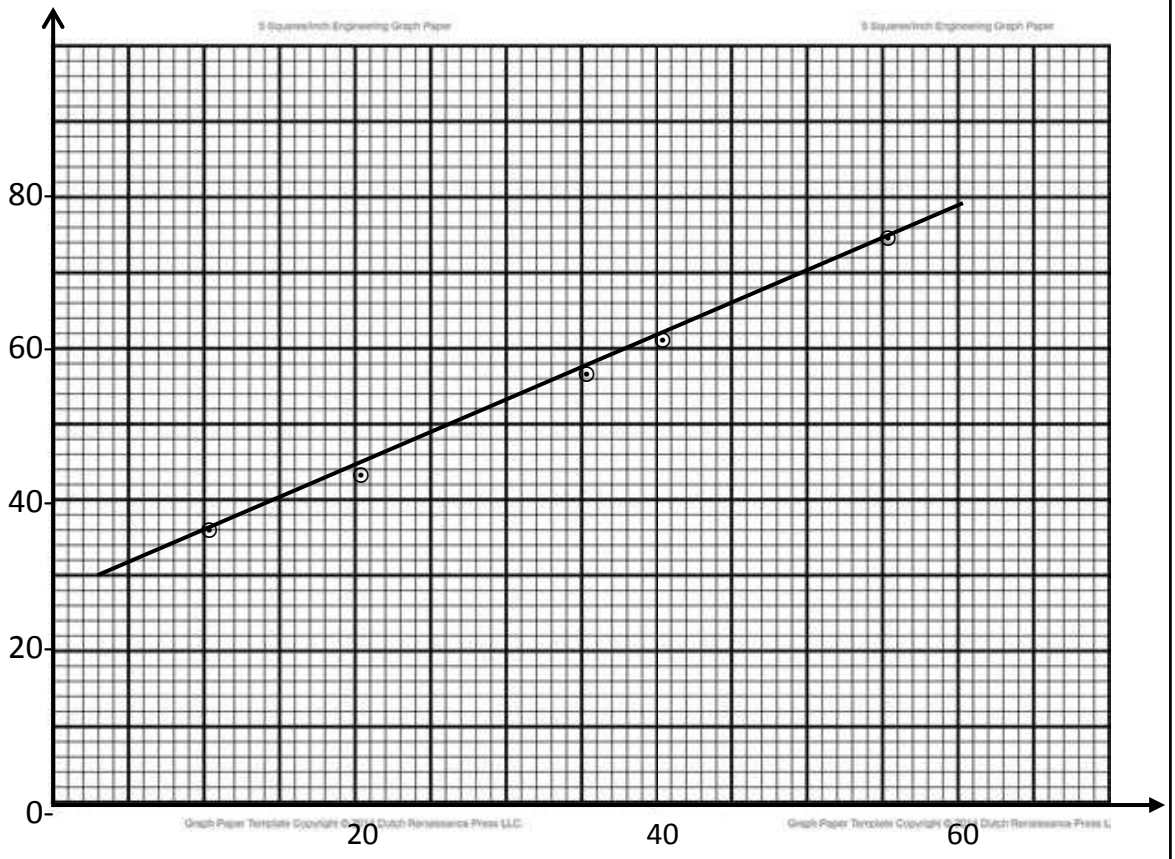
……..

d) By experiment data a student is drawn following graph




- i. Label the axis with unit.
  ii. Choose only the most suitable two point. Find the gradient of the graph (sufficient keeping fractions)

  ……

  ……

  ……..…

  ……

  iii. What is the other reading to find the density of the liquid. (d)
  What instrument you used to get that reading.

  ……

  ……

  iv. If external diameter of the tube is 7 $cm^2$ , find the density of the liquid (give the first decimal point)

  ……

  ……

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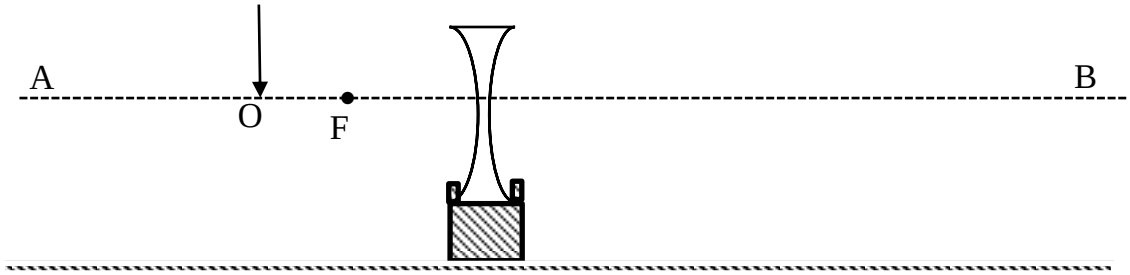
02. An experimental set up is shown below. For the determination of the focal length of a concave lens , O is the object pin.




a) You are provided two optical pins, a plane mirror strip, a meter ruler and background screen

i. What is the AB line

……

ii. Keep the background screen (S) on suitable place in the given diagram

iii. Determine the position of image (I) by using the rays in above diagram .

iv. What is the nature of the image and give the reason

……

……

b) i. Draw the eye on the most suitable place to observe the image in above diagram.

ii. Can't be see the observe image in middle area of the lens. How do you correct it.

……

……

iii. Position of the image can find or not by the parallax method, give the reason,

……..

iv. To find the position of the image keep the plan mirror strip (M) and locating pin (P) , suitable place on the above diagram.

v. To find the I draw the locating pin (Q) on the above diagram,

vi. How do you make sure that image coin side with Q

……

……

vii. If distance between M and lens is distance between M and P is y obtain the expressions for image distance V.

……

c) i. Get as objective distance u, image distance V and focal length f Build a relation to find the f by using graphical method

……

……

……

……

……

ii. Draw the rough sketch Can be obtained with labeling the axis

iii If gradient of like above graph is 5 x$10^{-2}$ find the focal distance of lens

……

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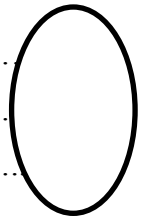
……..

iv. State and application of concave lens

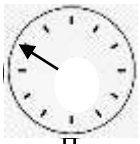
……

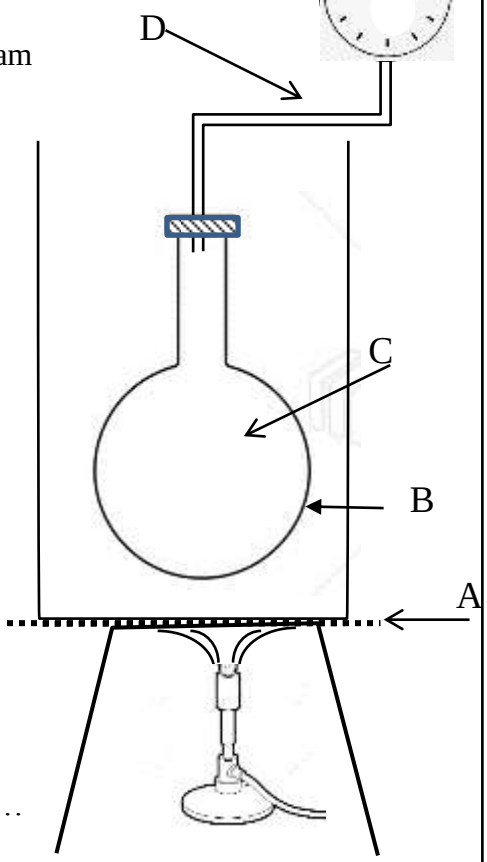
……

……



03 Figure shows a set up to verify the relationship between the pressure and the temperature of a gas at constant volume






a) i. Draw the two items not shown in the diagram

ii. Label the part of the given letters shown in the diagram.

A ……

B……..

C ……

D……..

iii. Give the reason using following parts.

A ……

B……..

iv. Clearly make the level of the water must be field in the beaker

v. What is the reason for use to water beaker

……

……

……

vi. Student says B must be thin wall is it true or false, give the reason.

……

……

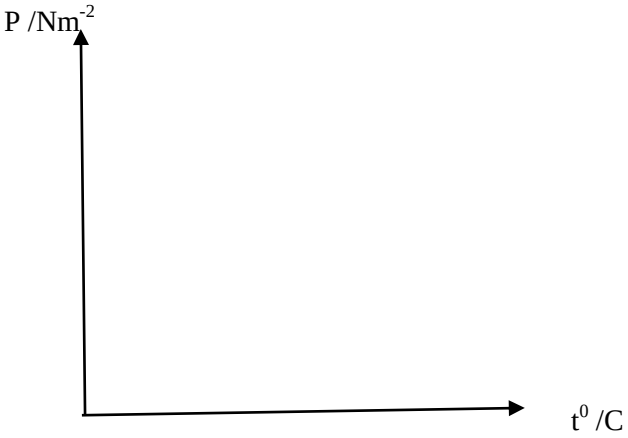
vii. When getting reading, what is the experimental procedure, temperature of the air to very close to readable value

……..

viii. When getting reading how to relevant temperature keep constant

……

b) i. Obtained reading by you draw the rough sketch on the given axis which temperature t/ $^0$C and pressure P/Nm$^{-2}$




ii. Extent the above graph to show the temperature when pressure of the air is zero.
Mark the value of that temperature

iii. Give the two reason practically hard to reach that value

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c ) Write down the low of air you are studied at above

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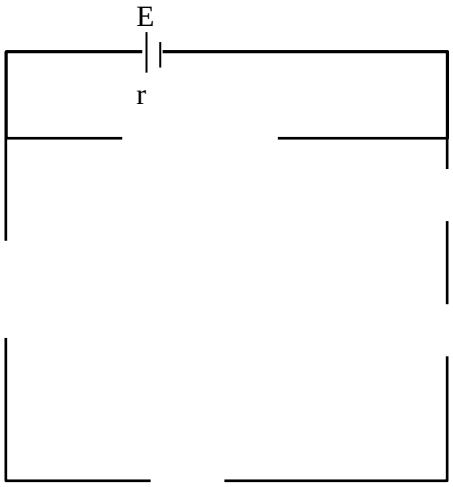
04 Figure shows a un complete circuit to find the internal resistance and the electromotive force of a dry cell




a) i. If you are provided digital voltmeter and a milliammeter connect them suitable position

ii. Provided rheostat and resistor R (10Ω ) Connect that suitable places

iii. What is the most suitable key you must connect in here

……

Connect it in suitable place with its symbol

iv. What is the reason for the use of the key that you mention

……

v. Explain with reason accuracy of the reading depend on the person that you use the key(k)

……

……

……

b) i. If electromotive force is E, internal resistance is r, current through the circuit is I, voltage difference between terminal is V, Write down the expressions for E above data

……

ii Re arrange the above expressions to find the r and E by graphical method

……

……

c) i. How do you get the voltmeter reading for minimum ammeter reading

……

……

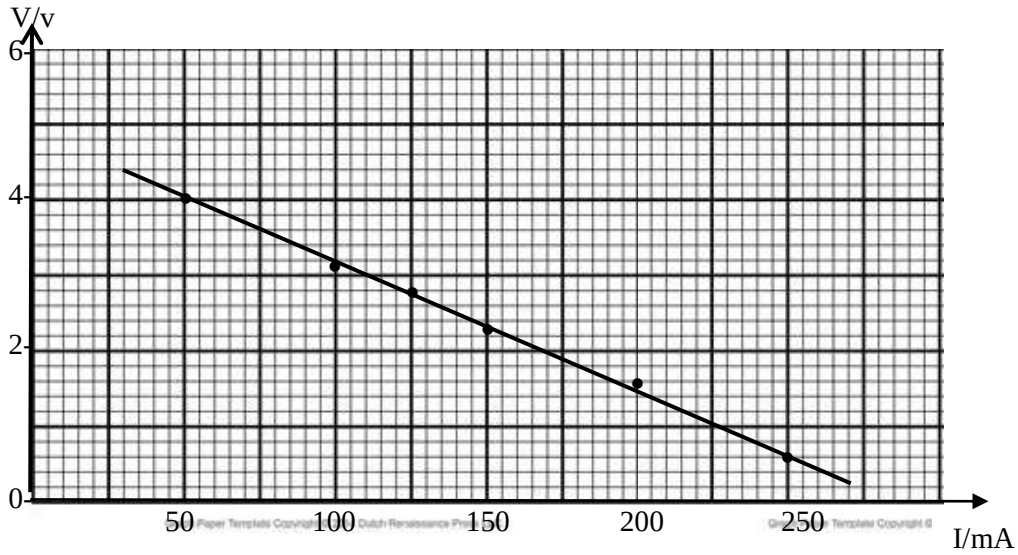
ii.` What is the benefit of connecting the R resistor

……

……

……

c) Following graph shows the variation of the ammeter reading and the voltmeter reading in above experiment




i. Find the gradient of the graph

……

……

……

……

……

ii. What is the internal resistance of the cell

……

iii. What is the electromotive force of the dry cell

……