



PHYSICS

BOOKS - VK GLOBAL PUBLICATION

PHYSICS (HINGLISH)

PRACTICAL BASED QUESTIONS

Experiment 1

1. Solid sodium bicarbonate was placed on a strip of pH paper. What was the change in

colour ?



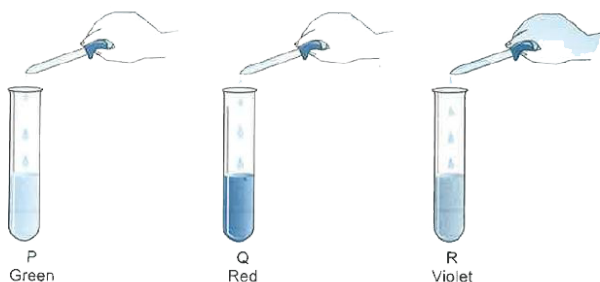
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2. A student adds a few drops of the universal indicator to a solution of dilute hydrochloric acid in the way shown here. What will be the colour change he observe ?



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3. On adding a few drops of universal indicator to three unknown colourless solutions (P), (Q) and (R) taken separately in three test tubes shown in the following diagrams, a student observed the changes in colour as green in (P), red in (Q) and violet in (R). What will be the decreasing order of pH?



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4. A student dips pH papers in solutions A and B and observes that the pH paper turns blue and orange respectively in them. What does he infer ?



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5. How is the presence of an acid tested with a strip of red litmus paper ?



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6. Four students I, II, III and IV were asked to examine the changes for blue and red litmus paper strips with dilute HCl (solution A) and dilute NaOH (solution B). The following observations were reported by the four students. The sign (-) indicating no colour change.

I

Litmus	A	B
Blue	—	Red
Red	—	Blue

II

Litmus	A	B
Blue	Red	—
Red	—	Blue

III

Litmus	A	B
Blue	Red	Red
Red	Blue	Blue

IV

Litmus	A	B
Blue	Blue	Blue
Red	Red	Red

Which student gave the correct observation?



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7. When a student added zinc granules to dilute HCl, a colourless and odourless gas was evolved, which was then tested with a burning match stick, what would be observed?



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8. When a few drops of phenolphthalein are added to a dilute solution of sodium hydroxide, a pink colour is produced. What will

be the colour of the final mixture when excess of HCl is added to it?



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9. What are the products obtained when zinc metal is allowed to react with dilute solution of sodium hydroxide?



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Experiment 2

1. What happens when ferrous sulphate crystals are heated?



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2. When an iron rod is dipped into a solution of copper sulphate, copper is displaced. Why is it so ?



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3. When we add water to quick lime we observe some changes. On the basis of those changes what can be concluded about the reaction between quick lime and water?



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4. Rahul adds aqueous solution of barium chloride to an aqueous solution of sodium sulphate. What would he observe?



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5. A student took four test tubes I, II, III and IV containing aluminium sulphate, copper sulphate, ferrous sulphate and zinc sulphate solutions, respectively. He placed an iron strip in each of them. In which test tube, a brown deposit is formed?



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Experiment 3

1. Iron filings were added to a solution of copper sulphate. After 10 minutes, it was observed that the blue colour of the solution changes and a layer gets deposited on iron filings. What is the colour of the solution and the layer gets deposited on iron fillings. What is the colour of the solution and the layer deposited?



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2. A strip of copper was placed in a beaker containing zinc sulphate solution. On observing the strip next day, was there any colour change in the strip?



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3. On adding zinc granules to freshly prepared ferrous sulphate solution, what is it observed?



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4. Four different test tubes were filled with aluminium sulphate solution. Different metals were introduced into these test tubes in following manner.

Test Tubes	Metal Introduced	Observation
1	Zn	No change
2	Fe	No change
3	Cu	No change
4	Al	No change

What can be inferred ?

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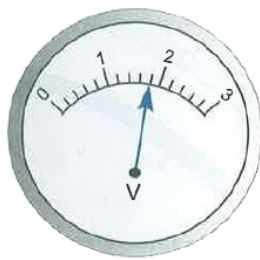
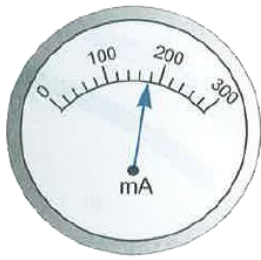
Experiment 4

1. An ammeter has 20 divisions between mark 0 and mark 2 on its scale. Find the least count of the ammeter.



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2. The current flowing through a resistor connected in an electrical circuit and the potential difference developed across its ends are shown in the given diagrams.



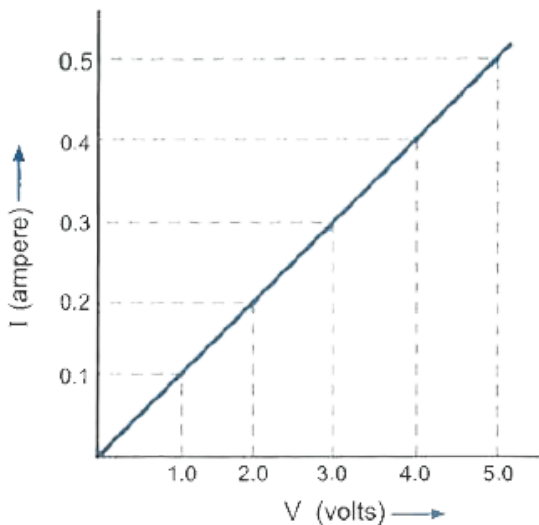
Find the value of resistance of the resistor in ohms.

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3. Plot a graph which shows the dependence of current I on potential difference V across a resistor R .

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4. In an experiment to study the dependence of current on potential difference across a resistor, a student obtained the graph as shown in the diagram.

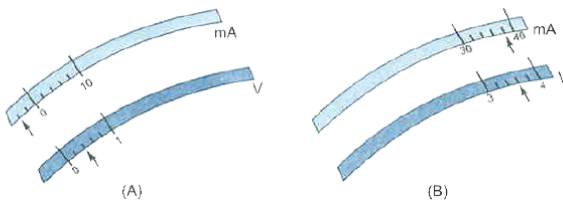


Find the value of resistance of the resistor?



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5. The rest positions of the needles in a milliammeter and voltmeter not in use are as shown in Fig. A. When a student uses these in his experiment, the readings of the needle are in the positions shown in Fig.B.



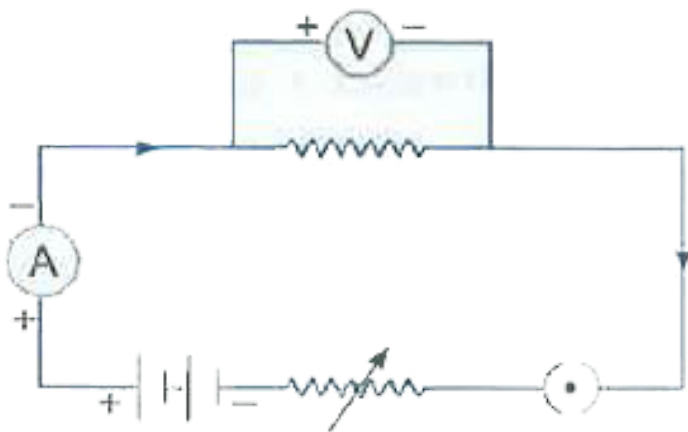
Find the corrected values of current and voltage in the experiment.



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6. The following circuit diagram shows the experimental set-up for the study of dependence of current on potential difference.

Which two circuit components are connected in series?



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Experiment 5

1. The following apparatus is available in a laboratory.

Cell : Adjustable from 0 to 4.5 volt

Resistors : 3Ω and 6Ω

Ammeters : A_1 of Range 0 to 3 A, Least count

$0.1A$, A_2 of Range $\geq 0 \rightarrow 1A$, Least count 0.05

Voltmeters : V_1 of Range $\geq 0 \rightarrow 10$ V,

Least count 0.5 V

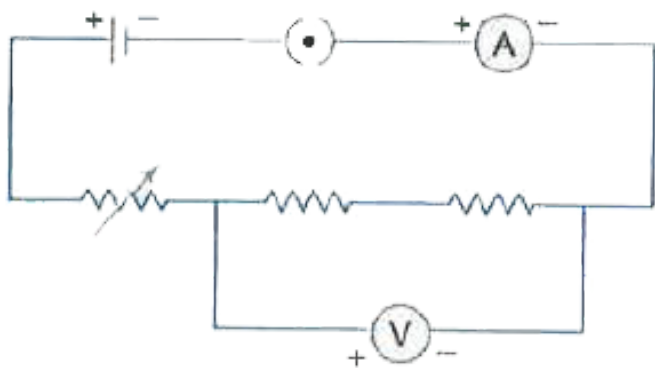
V_2 of Range 0 to 5V, Least count 0.1 V

Find the best combination of voltmeter and ammeter for finding the equivalent resistance of the resistors in series.



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2. To determine the equivalent resistance of two resistors when connected in series, a student arranged the circuit components as shown in the diagram. But he did not succeed to achieve the objective.



Which mistake has been committed by him in setting up the circuit?

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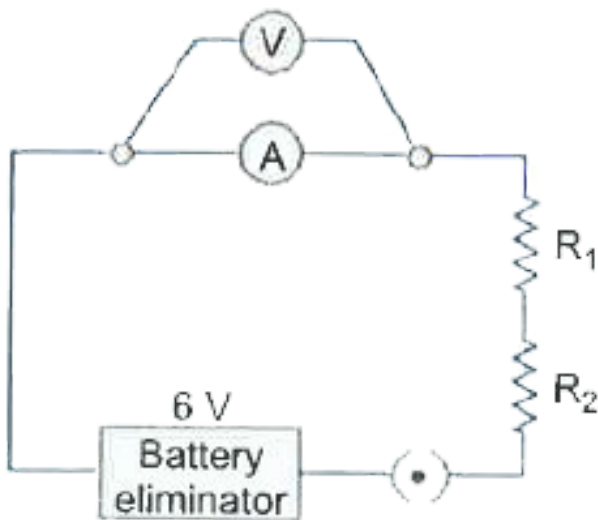
3. When a (60W,220V) bulb and a (100 W, 220 V) bulb are connected in series, then which bulb will glow brighter?



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4. In an experiment to find the equivalent resistance of a series combination of two resistors R_1 and R_2 , a student uses the circuit shown here. Will the circuit give the correct reading for current I and voltage V ? Justify

your answer.

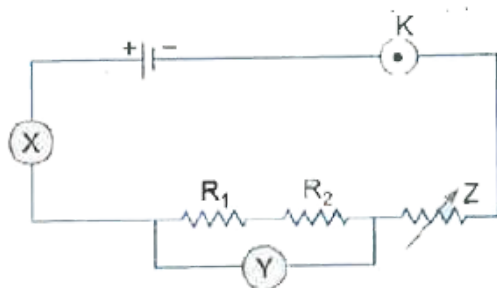


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5. The given circuit diagram shows the experimental arrangement of different circuit

components for determination of equivalent resistance of two resistors connected in series.

Identify the components X, Y and Z shown in the circuit respectively.



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6. A student did the experiment to find the equivalent resistance of two given resistors,

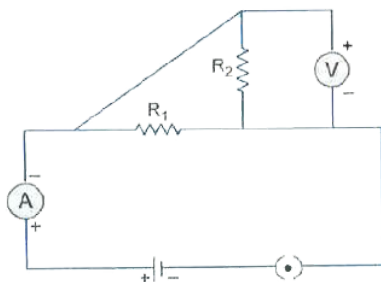
R_1 and R_2 first when they are connected in series and next when they are connected in parallel. The two values of the equivalent resistance obtained by him were R_s and R_p respectively. Compare R_s and R_p .



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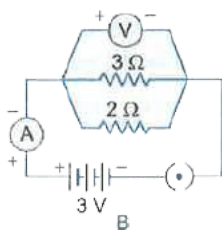
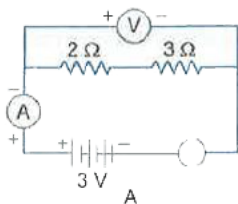
7. Which of the circuit components in the following circuit diagram are connected in

parallel?



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8. Find the voltmeter readings for the circuits A and B shown below.





9. The following apparatus is available in a laboratory.

Cell : Adjustable from 0 to 1.5 volt

Resistor : 4Ω and 12Ω

Ammeters : A_1 of range 0 to 3 A, Least count 0.1 A

A_2 of range 0 to 1 A , Least count 0.05 A

Voltmeters : V_1 of range 0 to 10 V, Least count 0.5 V

V_2 of range 0 to 5 v, Least count 0.1 V

Find the best combination of ammeter and voltmeter for finding the equivalent resistance of the resistors.



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Experiment 6

1. Which light influences the opening of stomata?



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2. While preparing a temporary stained mount of a leaf epidermal peel, how is the extra stain removed?



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3. Why was the temporary mount of the leaf epidermal peel pinkish-red under the microscope?



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4. To prepare a good temporary mount of the petunia leaf peel showing many stomata, from where does the student has to get the peel?

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Experiment 7

1. What type of seeds are used in experiment to show that CO_2 is given out during respiration ?

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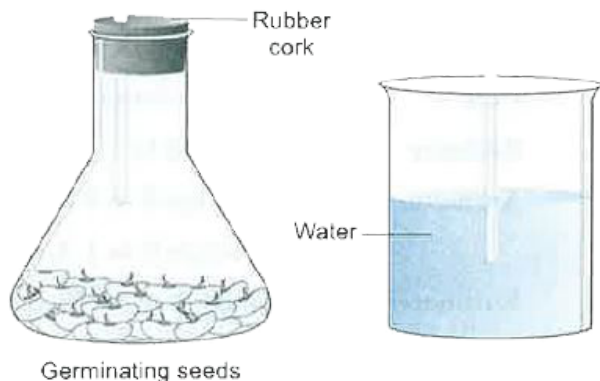
2. A student sets up the apparatus for the experiment to show that CO_2 is released during respiration. After 2 hours, what would he observe?



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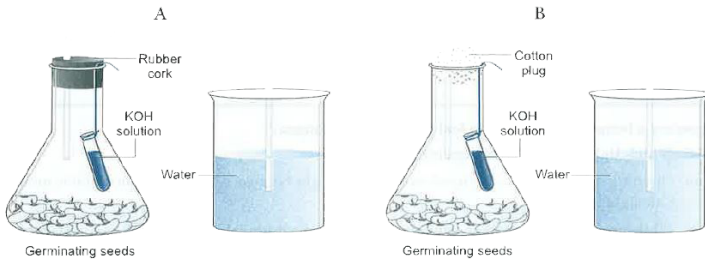
3. The following experiment was set up to show that a gas is given out during respiration. But there was no rise in the level

of water. Why did it happen?



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4. The following experimental set-ups were kept in the laboratory to show that CO_2 is given out during respiration’.



After 2 hours, in which delivery tube does the water rise?

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Experiment 8

1. What happens when 2 mL of acetic acid was added in drops to 5 mL of water?



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2. Ram adds acetic acid solution to solid sodium hydrogencarbonate. What would he observe?



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3. Devansh was asked to identify the test tube containing acetic acid out of the four test tubes A,B,C and D filled with different liquids. He smelled each of them and found.

(i) A gave very sweet smell.

(ii) B gave lightly pungent smell.

(iii) C was odourless.

(iv) D gave a bad odour.

Which test tube contains acetic acid?



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4. Four students A,B,C and D observed the chemical properties of acetic acid and recorded their observations in the table given below. Which student made the correct

observation?

Students	Effect on litmus		Reaction with NaHCO ₃	
	Blue to red	Red to blue	CO ₂ gas	H ₂ gas
A	X	✓	✓	X
B	X	✓	X	✓
C	✓	X	✓	X
D	✓	X	X	✓



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5. List two observations which you make when you add a pinch of sodium hydrogen carbonate to acetic acid in a test tube. Write chemical equation for the reaction that occurs

.



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6. When you add sodium hydrogen carbonate to acetic acid in a test tube, a gas liberates immediately with a brisk effervescence. Name this gas. Describe the method of testing this gas.



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7. A student is studying the properties of acetic acid. List two physical properties of acetic acid he observe. What happens when he

adds a pinch of sodium hydrogen carbonate to this acid? Write any two observations.



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Experiment 9

1. When soap is added to hard water, it reacts with the salts to form a scum. Why does this scum form ?



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2. A student was asked to take 10 ml of rainwater in test tube A and 1 g of calcium sulphate added to 10 ml of distilled both the test tubes B. He added couple of drops of soap solution to both A and B. After shaking both the test tubes equal number of times, what did the student observe ?



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3. Mohan takes 5 mL of distilled water in four test tubes A, B, C and D. He dissolves sodium

chloride in test tube A, calcium chloride in test tube B, magnesium chloride in test tube C and potassium chloride in test tube D. In which test tube(s) will scum be formed with soap?



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4. Kanchi takes 5 mL of distilled water in four test tubes A, B, C and D. She dissolves sodium chloride in test tube A, potassium chloride in test tube B, calcium chloride in test tube C and

magnesium chloride in test tube D. In which test tubes will soap give lather?



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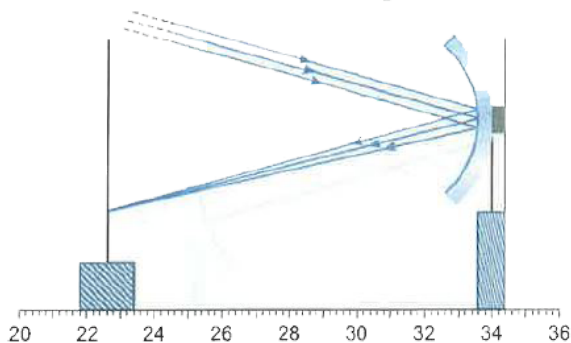
Experiment 10

1. A student obtains a blurred image of an object on a screen by using a concave mirror. In order to obtain a sharp image on the screen, in which direction he will have to shift the mirror?



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2. Find the focal length of the concave mirror in the experimental set-up shown in figure.



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3. For the determining focal length of a concave mirror, a teacher asks her students to identify concave mirror from a few mirrors lying on the table. The reason given by A, B, and D for picking up the right mirror is as follows:

A: the mirror is depressed at the center and self image formed is enlarged and erect.

B: the mirror is raised at the center and self image formed is smaller and erect.

C: the mirror is plane all over and self image is of same size.

D: the mirror is depressed at the center and self image formed is enlarged and inverted.

Which reason is correct? Justify your answer.



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4. A student wanted to pick up a concave mirror from three mirror A, B, C lying on a table to find its focal length. He looks into mirror A, he finds his image enlarged and erect. When he looks in mirror B, his image is diminished and erect. When he looks in mirror

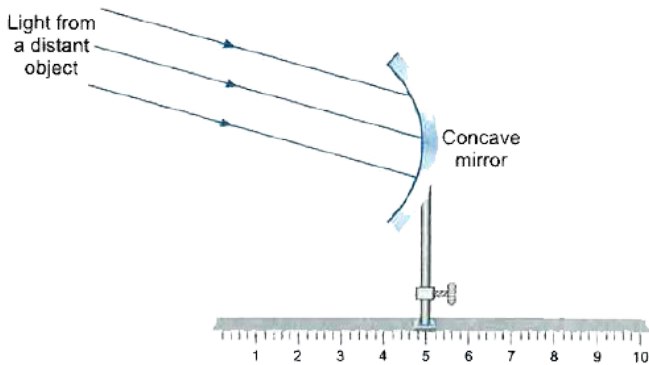
C, his image is erect and of same size. Find the correct identification of A, B C in respective order.



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5. In the below set-up, the focal length of the concave mirror is 4.0 cm. Where should the screen be placed on the scale to obtain a

sharp image?



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6. In an experiment to determine the focal length of a convex lens, a student obtained a sharp inverted image of a distant tree on the screen behind the lens. She then removed the

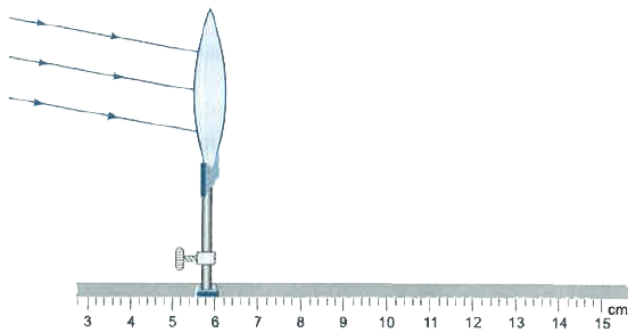
screen and looked through the lens in the direction of the object. What will she observe?



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7. The teacher asks a student to fix the given screen at an appropriate place in the given experimental set up, so that a clear image can be obtained on the screen. If the focal length of convex lens is 8 cm, find the mark on the

scale at which he should fix up the screen?



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8. Three students measured the focal length of a convex lens using parallel rays from distant object. All of the measured the distance between the lens and the inverted image on the screen. Student A saw a sharp image on

the screen and labelled the distance as f_1 .
Student B saw a slightly larger blurred image on the screen and labelled the distance as f_2 .
Student C saw a slightly smaller blurred image on the screen and labelled the distance as f_3 .
What is the relation between the three measurements?



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9. Take a convex lens and allow sunlight to fall on it. Hold a paper screen on the opposite

side. Move the paper screen slowly away from the lens till a sharp bright spot is formed on the screen. Which phenomenon is responsible for this bright spot? What represents the sharp bright spot on paper screen? What is the focal length of this convex lens? Is the image of the sun always real?



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Experiment 11

1. A student carries out the experiment of tracing the path of a ray of light through a rectangular glass slab, for two different values of angle of incidence $\angle i = 30^\circ$ and $\angle i = 45^\circ$. Find the set of values of the angle of refraction ($\angle r$) and the angle of emergence ($\angle e$) she is likely to observe in the two cases.



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2. An experiment to trace the path of a ray of light through a rectangular glass slab was performed by four students I, II, III, IV. They reported the following measurements of angle of incidence __ angle of refraction ___ and angle of emergence __ Which one of the students has performed the experiment correctly ?

Student	Angle i	Angle r	Angle e
I	60°	35°	59°
II	45°	40°	40°
III	35°	30°	40°
IV	50°	55°	50°



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3. In an experiment to trace the path of a ray of light passing through a rectangular glass slab, angle of incidence in air was given as 60° . Two students P and Q found angle of refraction as 42° and 65° respectively. Who is right and why?



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4. You are given a convex lens of focal length 30 cm. At what distance from the lens should

you hold a candle flame to observe a virtue image of the flame?



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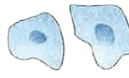
Experiment 12

1. A slide showing several Amoeba was given to a student and was asked to focus the Amoeba undergoing binary fission. What will the student look for to correctly focus on a dividing Amoeba ?

2. The given slides A and B were identified by four students I, II III and IV as stated below:



A



B

- I. Binary fission in *Amoeba*
- II. Budding in yeast
- III. Binary fission in *Amoeba*
- IV. Budding in yeast

- Daughter cells of *Amoeba*
- Buds of yeast
- Buds of yeast
- Daughter cells in *Amoeba*

Of the above mentioned identifications of slides A and B, which one is correct?

3. In the slides showing binary fission in Ameoba and budding in yeast, what is it observed?



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4. Which of the following is not the correct diagram depicting budding in yeast?



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5. Name the type of asexual reproduction in which two individuals are formed from a single parent and the parental identity is lost. Draw the initial and the final stages if this type of reproduction. State the event with which this reproduction starts.



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6. Students were asked to observe the permanent slides showing different stages of

budding in yeast under high power of a microscope.

(a) Which adjustment screw (coarse/fine) were you asked to move to focus the slides?

(b) Draw three diagrams in correct sequence showing budding in yeast.

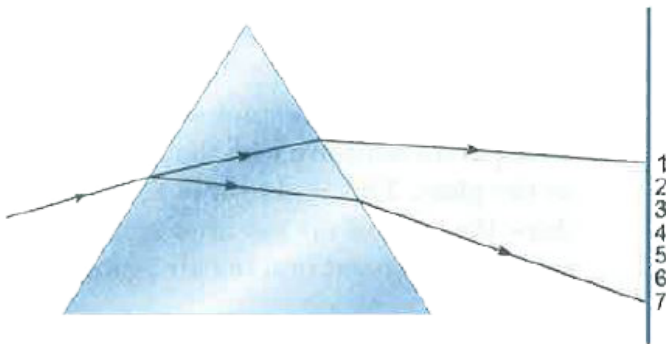


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Experiment 13

1. A beam of white light falling on a glass prism gets split up into seven colours marked 1 to 7 as shown in the diagram.

A student makes the following statements about the spectrum observed on the screen.



(a) The colours at positions marked 3 and 5 are similar to the colour of the sky and the sky and the colour of gold metal respectively. Is

the above statement made by the student correct or incorrect? Justify.

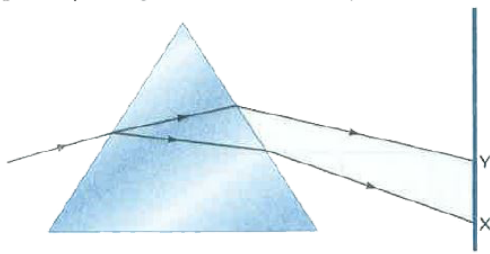
(b) Which two positions correspond closely to the colour of

(i) brinjal, (ii) 'danger' or stop signal lights?



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2. In the given figure, a narrow beam of white light is shown to pass through a triangular glass prism. After passing through the prism it produces a spectrum XY on a screen.



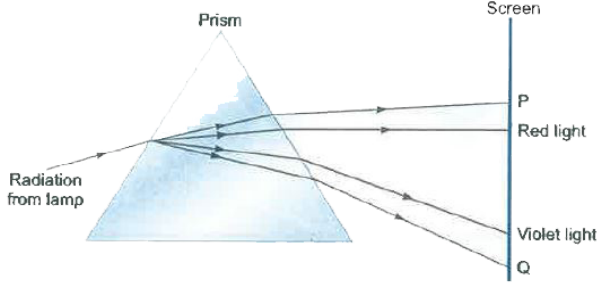
(a) State the colour seen at X and Y.

(b) Why do different colours of white light bend through different angles with respect to the incident beam of light?



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3. The diagram shown radiation from a lamp passing through a prism.

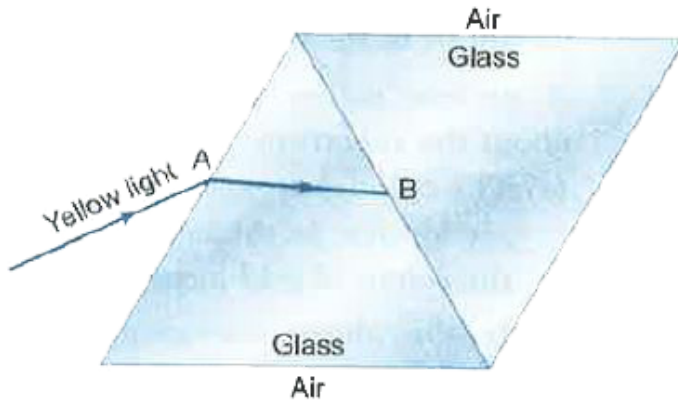


Which type of radiations are found at P and Q ?

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4. An identical prism is stuck to the first prism using a transparent adhesive with the same refractive index as the glass. This is shown in figure. In this figure, draw the path of the ray

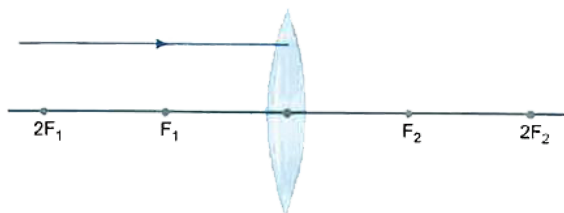
after it has reached B and until it has passed into the air again.



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Experiment 14

1. Redraw the given diagram and show the path of the refracted ray.

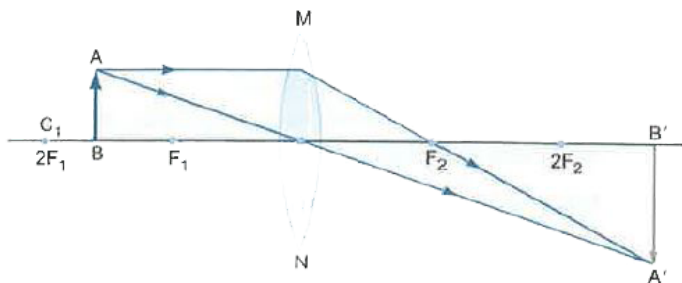


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2. Study the ray diagram given below and answer the following questions:

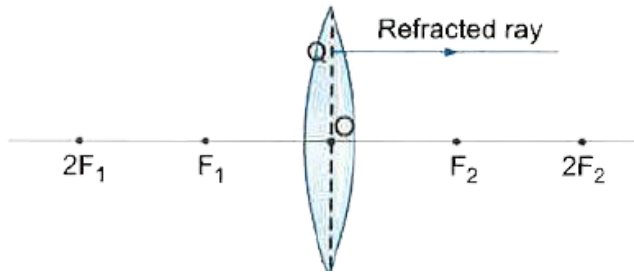
- (i) State the type of lens used in the figure.
- (ii) List two properties of the image formed.

(iii) In which position of the object will the magnification be -1 ?



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3. The diagram below shown the refracted ray QR through a convex lens.



Complete the diagram by drawing the corresponding incident ray.



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4. To find the image-distance for varying object-distance in case of a convex lens, a student obtains on a screen a sharp image of a bright object placed very far from the lens. After that he gradually moves the object

towards the lens and each time focuses its image of the screen.

(a) In which direction-towards or away from the lens, does he move the screen to focus the object?

(b) What happens to the size of image - does it increase or decrease ?

(c) What happens when he moves the object very close to the lens ?



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5. A 4 cm tall object is placed on the principal axis of a convex lens. The distance of the object from the optical centre of the lens is 12 cm and its sharp image is formed at a distance of 24 cm from it on a screen on the other side of the lens. if the object is now moved a little away from the lens, in which way (towards the lens or away from the lens) will he have to move the screen to get a sharp image of the object on it again? How will the magnification of the image be affected ?



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6. A student places a 8.0 cm tall object perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 30 cm. He obtains a sharp image of the object on a screen placed on the other side of the lens. What will be the nature (inverted, erect, magnified, diminished) of the image he obtains on a screen? Draw ray diagram to justify your answer.



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Experiment 15

1. What is the function of cotyledons?



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2. What is hypocotyls ?



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3. What is the function of seed coat seed coat?





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4. How are monocots different from dicots?



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