

X -STD., SCIENCE
EASY PRACTICAL
GUIDE

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SCIENCE PRACTICALS

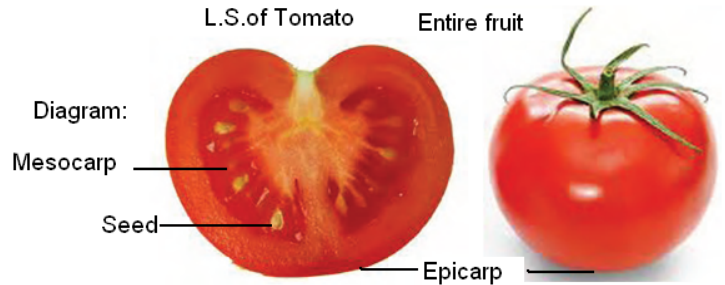
SUBJECTS		S.NO.	CONTENTS
BIOLOGY	BIO-BOTANY	1. Ju.	Classify the given fruit and give reasons with diagram.
		2. Ju.	Dissect and display the floral parts like Calyx, Corolla, Androecium and Gynoecium of any locally available flower.
		3. Ju.	Identify the given slide with help of microscope.
		4. Oc.	Fermentation Experiment .(Anaerobic Respiration)
	BIO-ZOOLOGY	5. Oc.	Identification of given models (a) Human heart (b) Human brain (c) Human kidney.
		6. July	Identify the flag labelled endocrine gland. (a) Thyroid gland (b) Pancreas – islets of langerhans (c) Adrenal gland
		7. Oc.	Test for Starch .(Iodine test)
		8. July	To identify the given slide and to write notes with neat labeled diagram.
CHEMISTRY	9. Aug.	You are provided with a solid sample. Prepare a solution and identify the type of solution based on filtration.	
	10. Aug.	To observe the reaction between lead nitrate solution and potassium iodide solution and identify the type of reaction	
	11. Aug.	You are provided with the sample solution. Perform the following tests and identify whether the given sample is an acid or a base.	
	12. Nov.	You are provided with sample A&B. Find the nature of sample as acids/bases/neutral by using p^H paper.	
PHYSICS	13. Sep.	Screw Gauge	
	14. Sep.	Ohm's Law Verification	
	15. Dec.	Mapping of magnetic field	
	16. Dec.	Focal length of convex lens (a) Distance object method (b) $u - v$ method	

BIO-BOTANY
Exercise No : 1

Classification – 1
Diagram + parts – 2
Reasons – 2

Classify the given fruit and give reasons with diagram
(a) Tomato

- (i) Classification : Simple fleshy fruit – Berry – L.S. of Tomato
 (ii) Reasons :
 1. Fruit is developed from the single flower, multicarpellary, syncarpous and superior ovary.
 2. The entire fruit is edible.



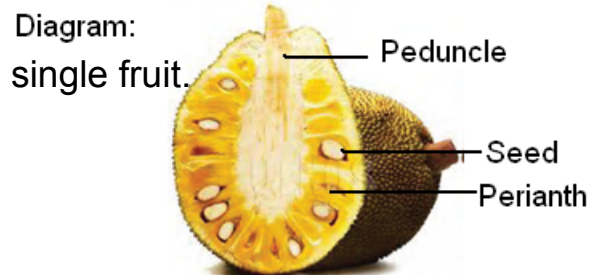
(b) Polyalthia

- (i) Classification : Aggregate fruit – (e.g.) Polyalthia
 (ii) Reasons:
 1. Polyalthia develops from the single flower with multicarpellary apocarpous ovary.
 2. During fruit formation each free carpel develops into fruitlet.
 3. So, there are many fruitlets seen attached to a common stalk.



(c) Jack fruit

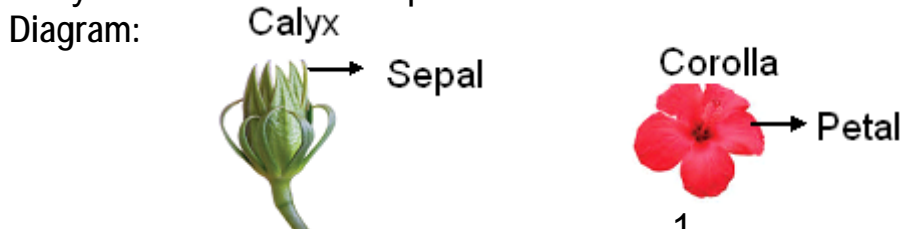
- (i) Classification : Multiple fruit - (e.g.) Jack fruit
 (ii) Reasons :1.
 The entire female inflorescence develops into a single fruit.
 2. The fertilized flowers develop into fruitlets.



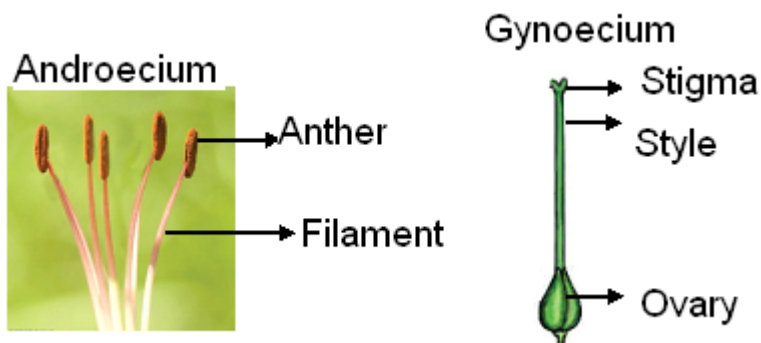
Exercise No : 2

Dissect and display the floral parts like Calyx, Corolla, Androecium and Gynoecium of any locally available flower.

- Floral parts** 1. Calyx 2. Corolla 3. Androecium – Male parts of the flower
 4. Gynoecium – Female parts of the flower



Dissection – 1 ½ marks
Display – 1 ½ marks
Diagram + parts – 1+1 = 2



Exercise No : 3

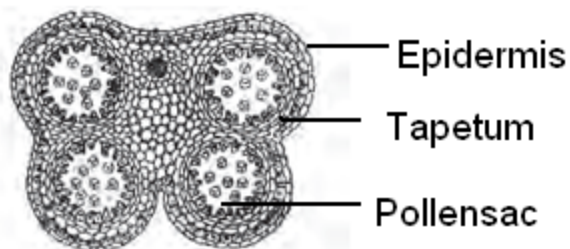
Identify the given slide with help of microscope

(A)Identification – The given slide kept for identification is **T.S of Anther**

Reasons:

- 1.Each anther lobe is covered by 4 layered wall.
- 2.Inner to the anther wall pollen mother cell is present.
- 3.The pollen mother cell divides meiotically to produce pollen grain

Diagram:



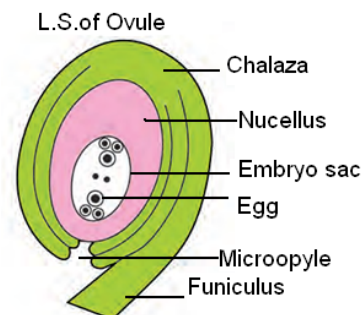
Identification – 1
Reasons – 2x1 = 2
Diagram + parts – 1+1 = 2

(B)Identification – The given slide kept for identification is **L.S of mature ovule**

Reasons:

- 1.The ovule consists of two protective coats called integuments.
- 2.The embryo sac is found inside the nucellus.
- 3.Embryosac contains Eight nuclei.

Diagram:



Exercise No : 4

Aim : To prove the fermentation process.

Materials and apparatus required:

Sugar solution, Baker's yeast, conical flask (250ml), Beaker and Lime water.

Procedure:

Take sugar solution with small quantity of baker's yeast in a (2/3) conical flask. Close the mouth with one holed rubber cork and insert a delivery tube. Immerse the other end of the delivery tube in a beaker containing lime water. Keep the apparatus in sunlight for 2 hours.

Observation: Lime water in the beaker turns milky.

Inference: Due to fermentation of sugar solution, CO₂ is released and ethanol is formed.

Aim – 1 Material required – 1
Procedure – 1, Observation – 1, Inference – 1

BIO-ZOOLOGY
Exercise No : 5

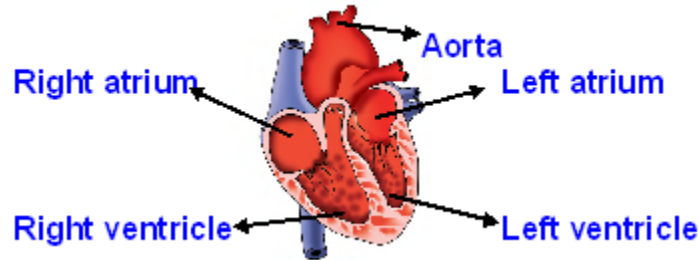
Identification – 1mark
Diagram + Parts – 2
Notes – 2

Identification of given models

(a) L.S. of Human heart

Identification: The given model is identified as L.S. of Human Heart

Diagram :



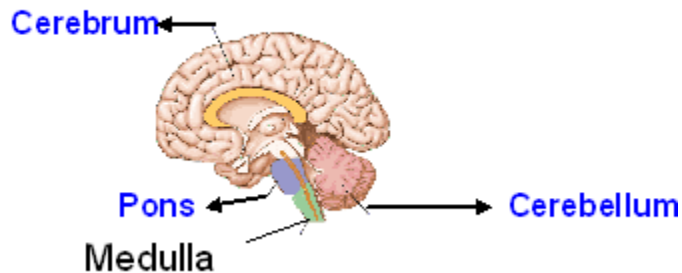
Notes:

1. Heart is a hollow fibro muscular organ, which is conical in shape.
2. It has four chambers namely two auricles and two ventricles.

(b) L.S. of Human brain:

Identification: The given model is identified as L.S. of Human Brain.

Diagram :



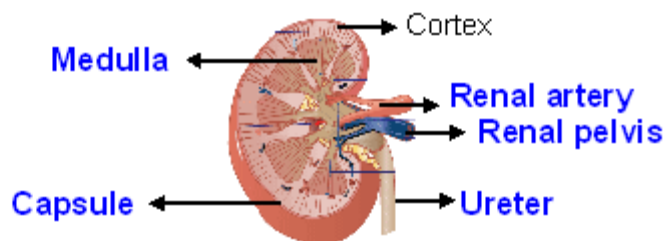
Notes:

1. Human brain is placed inside the cranial cavity.
2. Human brain is divided into three major parts namely forebrain, midbrain and hind brain.
3. Human Brain contains millions of neurons.

(c) L.S. of Human kidney:

Identification: The given model is identified as L.S. of Human Kidney.

Diagram :



Notes:

1. Kidney is the principal excretory organ of our body.
2. Kidney is bean shaped.
3. A kidney has about 1.0 millions of functional units called nephrons.

Exercise No : 6

Identify the flag labelled endocrine gland and write its location, hormones secreted and any two of its functions. (No need to draw the diagram among two models anyone consider in examination)

Endocrine glands –

(a) Thyroid gland (b) Pancreas – Islets of longerhans (c) Adrenal gland

(a) Thyroid gland

Identification: The marked endocrine gland is identified as Thyroid gland

Location : Thyroid gland is located in the neck region on either side of the Trachea.

Hormones secreted: Thyroxine

Functions of Hormones:

1. Thyroxine increases the basal metabolic rate (BMR).
2. It increases the body temperature.
3. It is a personality hormone.

(b) Pancreas – islets of longerhans

Identification: The marked endocrine gland is identified as Islets of Longerhans .

Location: Islets of Longerhans are seen embedded in Pancreas which is located in the abdominal region.

Hormones secreted:

1. α cells secrete glucagon and
2. β cells secrete Insulin and amylin.

Functions of Hormones:

1. Insulin converts glucose into glycogen and deposite in liver and muscles.
2. Glucagon converts glycogen into glucose.

*Identification – 1 mark
Location – 1 mark
Hormones secreted – 1 mark
Any two functions – 2 mark*

(c) Adrenal gland

Identification: The marked endocrine gland is Adrenal gland.

Location: Adrenal glands are located above each kidney in the abdominal region.

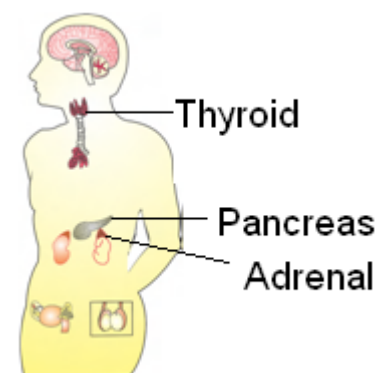
Hormones secreted:

Adrenal cortex – Aldosterone and Cortisone.

Adrenal medulla – Adrenaline and Nor-Adrenaline

Functions of Hormones:

1. Aldosterone – Regulates mineral metabolism.
2. Cortisone - Regulates carbohydrate metabolism.
3. Adrenalin and Nor Adrenalin increase the heart beat rate and respiratory rate.



(Need not draw diagram for exam.)

Exercise No : 7

Aim : To find out the presence of starch in the given food samples A and B by Iodine test.

Materials and apparatus required:

Food sample A and B, Iodine solution, Test tubes, Test tube holder, Test tube stand etc.

Procedure: Take 1ml of food samples A and B and add one drop of Iodine solution into each of the test tubes and mix well.

Observation:

Food sample	Observation	Inference
A	Dark blue colour	Presence of starch.
B	Colourless	Absence of starch.

*Materials required – 1
 Procedure – 1
 Table – 2
 Result – 1*

Result:

Appearance of dark blue colour in the Sample A indicates the presence of Starch.

Exercise No : 8

Identify the given slide, draw neat labelled diagram and write a note on it.

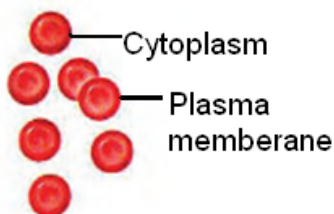
(a) Red Blood Corpuscles

(A)Identification: – The given slide is identified as Red Blood Corpuscles

Reasons:

- 1.RBCs are circular, biconcave and disc shaped.
- 2.The young RBCs have nuclei but the mature RBCs do not have nuclei.

Diagram:

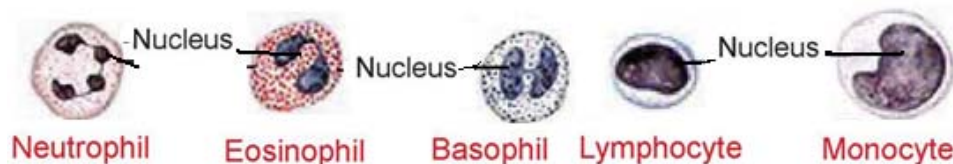


*Identification – 1
 Reason – 2
 Diagram + parts – 2*

(b) White Blood Corpuscles (Leucocyte)

Identification: The given slide is identified as White Blood Corpuscles

Diagram:



Reason:

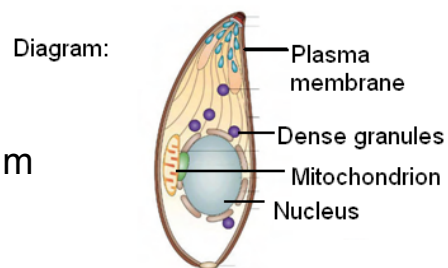
- 1.WBCs are amoeboid in shape.
2. WBCs have a prominent nuclei.
3. There are 5 different types of WBC.

(c) Plasmodium

Identification: The given slide is identified as Plasmodium

Reason:

- 1.Plasmodium is a protozoan organism.
2. Plasmodium parasite causes Malaria.



Chemistry
Exercise No: 9

For 9,10,11& 12

Aim – 1mark

Procedure/ observations – 2marks

Result – 2 marks

Total – 5 marks

Aim:

To prepare a solution from the solid sample and identify the type of solution based on filtration.

Materials required :

Beaker, water, glass rod, filter papers, test tube, test tube stand, funnel and given solid sample.

Procedure:

Experiment	Observation	Inference
Take 50ml of water in a beaker. Add the given solid sample, into the beaker and stir the content gently with the help of glass rod. Filter the solution by using filter paper.	a) Solute particles do not remain in the filter paper.	a) True solution.
	b) Solute particles remain in the filter paper.	b) Suspension.

Result:

The given solid sample forms _____ Solution (True/Suspension).

Exercise No : 10

Aim:

To observe the reaction between lead nitrate solution and potassium iodide solution and identify the type of reaction.

Material required :

Test tubes, test tube stand, lead nitrate solution and potassium iodide solution.

Procedure:

Take 3 ml of lead nitrate solution in a test tube A. Take 3 ml of Potassium iodide solution in another test tube B. Transfer the solution from A to B and shake gently. Record the observations in the observation table.

Observation:

Sl.No.	Experiment	Observation
1.	1. Observe the colour of solutions before the addition of two solutions	Colourless (or) White in colour.
2.	2. Mix the two solution	Yellow precipitate

Result:

From the above observation, between lead nitrate solution and potassium iodide solution is double displacement reaction.

Exercise No :11

a) Phenolphthalein b) Methyl orange c) Sodium carbonate d) Zinc granules

Aim: To identify the presence of an acid or a base in a given sample.

Materials required:

Test tubes, test tube stand, glass rod, phenolphthalein, methyl orange, sodium carbonate salt, zinc granules and the given sample.

S.No.	Experiment	Observation (Colour change)	Inference (Acid/base)
1.	Take 5 ml of the test solution and add Phenolphthalein in drops.	No change in colour.	Presence of acid.
2.	Take 5 ml of the test solution and add Methyl orange in drops.	Turns pink in colour.	Presence of acid.
3.	Take 5 ml of the test solution and add a pinch of sodium carbonate..	Brisk effervescence occurs	Presence of acid.
4.	Take 5 ml of the test solution and add little of zinc granules.	Bubbles come out.	Presence of acid.

Result:

The given test solution contains Acid.

(OR)

S.No.	Experiment	Observation (Colour change)	Inference (Acid/base)
1.	1 Take 5 ml of the test solution and add Phenolphthalein in drops.	Turns pink in colour.	Presence of base.
2.	Take 5 ml of the test solution and add Methyl orange in drops.	Turns yellow in colour.	Presence of base
3.	Take 5 ml of the test solution and add a pinch of sodium carbonate..	No Brisk effervescence	Presence of base.
4.	Take 5 ml of the test solution and add little of zinc granules.	Bubbles do not come out.	Presence of base.

Result:

The given test solution contains Base.

Exercise No : 12

Aim: To identify the nature of the given solution by using pH paper.

Materials required:

Sample solutions A&B, p^H paper, glass rod and watch glass.

Procedure:

Take a p^H paper. Place it on a watch glass. By using glass rod dip a drop of each sample on the p^H paper. Observe the colour change appeared and note down the approximate p^H value based on the reference scale given on p^H paper.

Observation:

Test tubes	Sample	p^H paper		Inference Nature of solution
		Colour produced	Approximate p^H	
A	HCl	Red	1	Acid
B	NaOH	Violet	10	Base

Result:

The given sample A is Acid. B is Base.

PHYSICS**Exercise No : 13**

Aim: To find out the thickness of the given one rupee coin.

Materials required : Screw gauge, one rupee coin.

Pitch

Formula :Thickness = P.S.R + (H.S.C X L.C) \pm Z.C (mm)

$$\text{Least count} = \frac{\text{Pitch}}{\text{No. of HSD}}$$

Procedure:

Find the least count and zero error of the screw gauge. Place the given coin between two studs. Note the PSR and HSC. Repeat the experiment for different positions of the coin. Tabulate the readings. Find the average of the readings.

Table: L.C = 0.01mm Z.E = Nil Z.C = 0

Trial No.	P.S.R (mm)	H.S.C	H.S.C x L.C	Thickness of the coin = P.S.R + (H.S.C X L.C) \pm Z.C (mm)
1.	1	82	0.82	1.82
2.	1	84	0.84	1.84

Mean: 1.83mm

Result: The thickness of the given coin = 1.83 mm

Least count – 1 mark
 Procedure – 1 mark
 Tabulation – 1+1 mark
 Result +unit – 1 mark

Exercise No :14

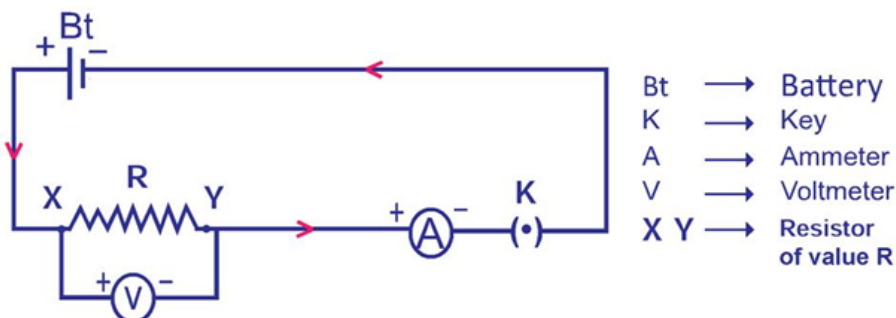
Aim: Verify the Ohm's law.

Material required : A resistor of unknown value, an ammeter (0-3 A), a voltmeter (0-10V), a battery eliminator, plug key and connecting wires.

Formula :

$$\text{Resistance } R = \frac{V}{I} \Omega$$

Circuit diagram :



Procedure:

Note the range and least count of the given ammeter and the voltmeter. Set up the circuit and keep the rating of the battery eliminator at the minimum of two. (say at 1.5 V) .Note the readings of the ammeter and voltmeter and record them. Repeat the experiment by varying the rating of the battery to 4 & 6 (1.5v) batteries..

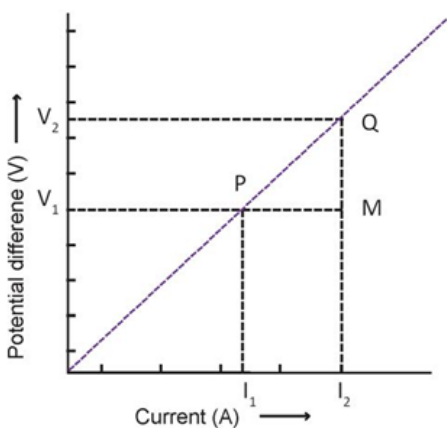
Observations and Calculations:

Sl. No.	No.of batteries applied in the circuit	Current through the Resistor, I (in ampere)	Potential difference across the ends of the resistor,V (in volt)	Resistance of the resistor $R = V/I$ (in ohm)
1.	2	60	2.8	46.6
2.	4	120	5.2	43.3

Mean value of resistance R of the resistor = 44.9 Ω

Graph:

Find the range of variation in the values of I and V. Mark the points on the graph paper for each value of I and V. Join all the points by a straight line. Find the slope of this line.



Formula – 1/2 mark
 Circuit Diagram – 1/2 mark
 Procedure – 1 mark
 Tabulation – 1 mark , Graph – 1 mark
 Result + unit – 1 mark

Result:

1)Resistance R of the resistor obtained from the calculations = _____ ohm.

2)Resistance R of the resistor obtained from the graph = _____ ohm.

Exercise No : 15**Aim: Mapping of magnetic field.**

Apparatus required: Drawing Board, Board pin or cello tape, compass Needle, sheets of whitepaper and Bar magnet.

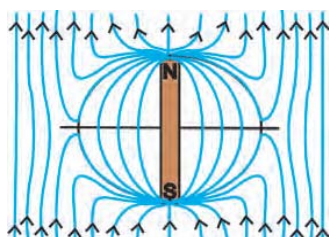
Procedure:

A white sheet of paper is fastened to the drawing board.The compass needle is placed at the centre of the paper, mark the two points of the needle. Join these points.We obtained a straight line.This is the magnetic meridian.

The bar magnet is placed on the line at the centre of the paper with its north pole facing the geographic north. The outline of the bar magnet is drawn. The plotting compass is placed near the North Pole; the ends of the needle are marked.Move the compass to a new position.

In this way proceed step by step till the South Pole of the magnet is reached. In the same way several magnetic lines of force are drawn around the magnet. The direction of the lines is shown by arrows heads. The mapped sheet is attached.

Result: 1) The magnetic lines never intersect each. 2)They are closed and continuous.



Magnetic meridian – 1 mark
 Procedure – 1 mark
 Magnetic lines – 2 marks
 Result – 1 mark

Exercise No : 16

Aim: To determine the focal length of the given convex lens by

I. distance object method II. u-v method

Materials required :

Convex lens, lens stand, white screen, meter scale, and illuminated wire gauze.

Formula :

Focal length of the convex lens by u-v method

$$f = \frac{uv}{u+v}$$

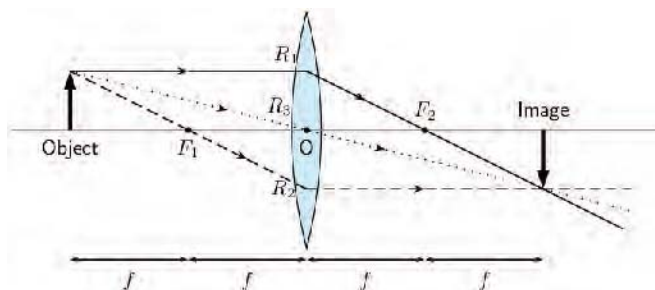
Procedure

Distant object method

The convex lens is mounted on the stand .The white screen is placed behind the lens and adjusted to get a clear, image of the object.The distance between the convex lens and the screen is measured. This gives an approximate value of the focal length of the convex lens.

u v method

The convex lens is mounted on the stand and placed in front of the illuminated wire gauze.The screen is adjusted to get a clear image.



Formula – 1 mark
 Procedure – 1 mark
 Tabulation – 1 mark
 Diagram – 1 mark
 Result + unit – 1 mark

S.No.	Nature of Image	Object distance u cm.	Image distance v cm	Focal length $f = \frac{uv}{u+v}$
1.	u < 2f magnified	16	31	10.55
2.		18	27	10.80
3.	u > 2f diminished	23	20	10.69
4.		25	18	10.465

Result:

10.62

The focal length of the given convex lens by

i. Distance object method (f) = 10.5 cm ii. u-v method (f) = 10.6 cm

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