

c. The rear view mirror of a car is a plane mirror. A driver is reversing his car at a speed of 2 m/sec. The driver sees his rear view mirror. The image of a truck parked behind his car, what will be speed at which image of truck appears to approach the drivers?

A: 2 m/sec

d. What are the uses of concave mirror?

Ans: ① Doctors use concave mirror for examining eye, ear, nose & throat.

② Dentists also use concave mirror to see an enlarged image of the teeth.

③ The reflectors of torches, headlights of cars & scooters are concave in shape.

e. What type of mirror is the reflecting surface of the bell?

A: The reflecting surface of the bell is convex.

Q12 What is a virtual image? Give 1 situation where a virtual image is formed.

- a: An image which cannot be obtained on a screen is called virtual image. Image formed by a convex mirror ~~is real~~ is smaller in size than the object.
- b: Find out the letters of english alphabet or any other language known to you in which a image in a plane mirror appears exactly like the letter itself.
- c: A, H, I, M, O, T, U, V, W, X, Y
- d: Write 1 use of convex mirror.
- e: Convex mirrors can form images of objects spread over a large area so they are used as a rear view mirror in automobiles as they help the driver to see the traffic behind.
- f: Which type of mirror can form a real image?
- g: Which type of mirror can form a real & inverted image.
- h: Which type of lens always forms a virtual image?
- i: concave lens.

Teacher's Signature :  

(Q) Which lens is called magnifying glass & why?

A Convex lens is called magnifying glass because when any object is placed near the lens it forms a magnified image which is virtual and erect.

(Q) With the help of an activity while show that white light consist of 7 colours? Draw the diagram (Fig 15.30)

P. Aim? To show that white light consist of 7 colours

Materials : A glass prism, white sheet of paper & a source of light.

Method : (1) Take a glass prism.

(2) Allow a narrow beam of sunlight through a small hole in the window of a dark room to fall on one face of the prism.

(3) Let the light coming out of the other face of the prism fall on a white sheet of paper or on a white wall.

Observation : The white light that fall on a white sheet or on the wall appear colourfull

A - 31 (b)

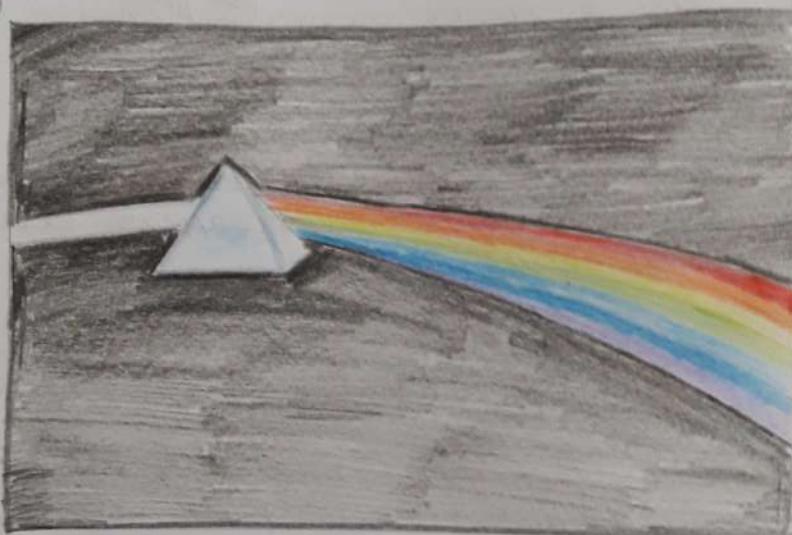


Fig → A prism splits sunlight into seven colours.



Conclusion : It shows that sunlight consists of 7 colours. The sunlight is said to be white light. This means that white light consists of 7 colours that is the colours of the rainbow VIBGYOR.

V - ^{iolet} Violet

I - Indigo

B - Blue.

G - Green

Y - Yellow

O - Orange

R - Red

c. What is meant by reflection of light?

A: A mirror changes the direction of light that falls on it. This change of direction of light by a mirror is called as reflection of light.

Q14 When a convex lens is used as a magnifying glass?

A: When the object is placed very close to the convex lens the image formed is virtual, erect, magnifying magnified. When used to see the object magnified the convex lens is called magnifying glass.

Chapter - 16
Water : A Precious Resource (1)

Q1. What is the effect of water scarcity on plants?

A: Plants need water, minerals & nutrients from the soil to prepare their food. If there is water scarcity plants will not get sufficient amount of water and they will start drying.

Q2. Draw a well labelled diagram of water cycle.
 (Fig - 16.5)

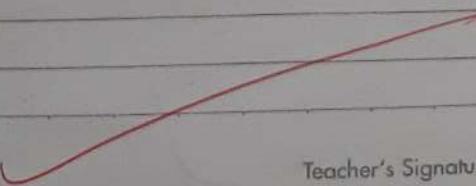
3(a) Draw a well labelled diagram of ground water & water table. (Fig 16.7)

(b) What do you mean by aquifer?

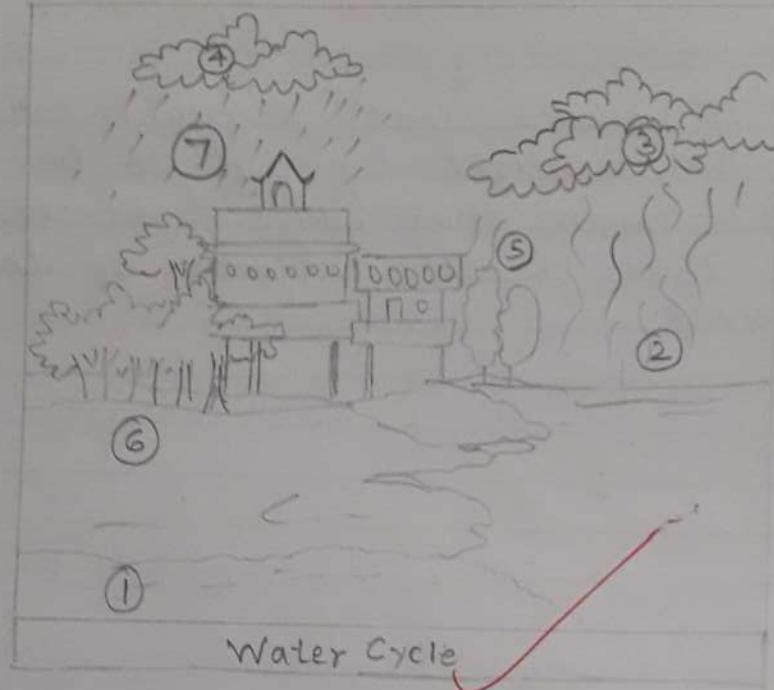
Or

How can water in aquifer be drawn out for use?

A: At places the ground water is stored between layers of hard rock below the water table, this is known as aquifer. Water in the aquifer can be usually pumped out with the help of tube wells or pumps.

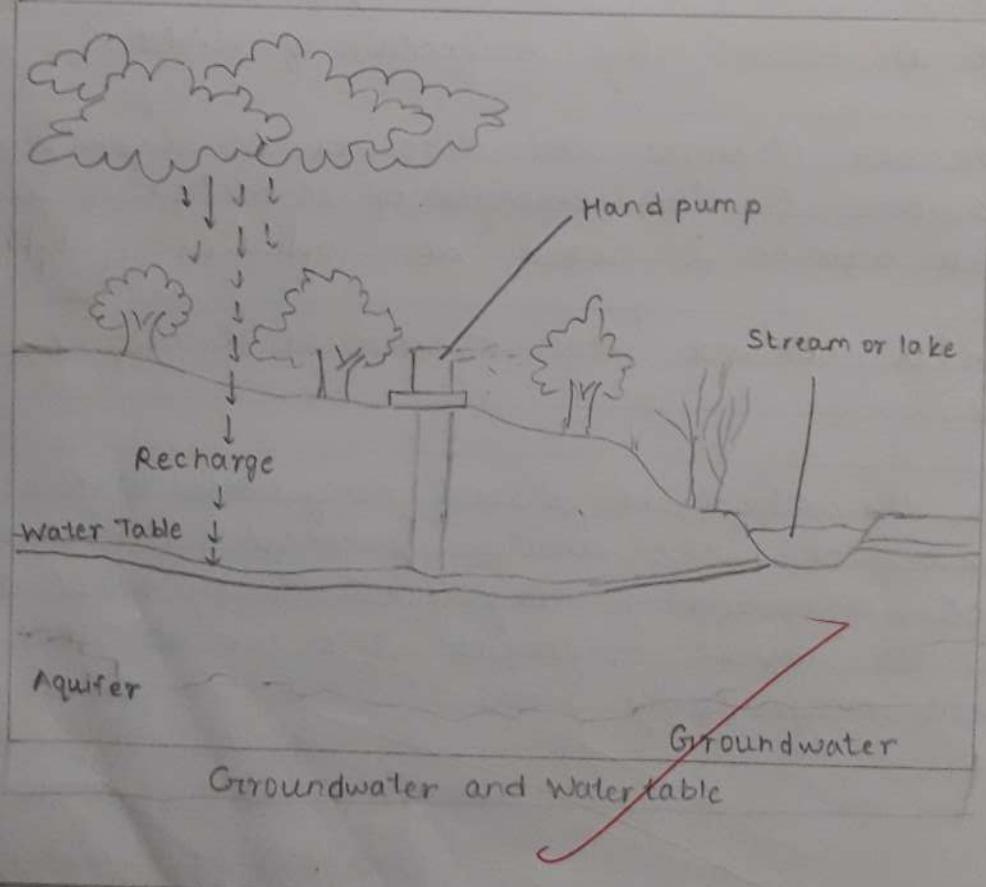
Teacher's Signature : 

A-2



1. ground water
2. evaporation
3. condensation
4. clouds
5. transpiration
6. infiltration
7. precipitation

A-3



- (c) What are the forms of water found when it circulates through water cycle?
- * Water is found in the form of water vapour (gaseous state), ice (solid state) and rain (liquid state) during water cycle.
- Q4. What form of water is present in:
- air around us.
 - The ice caps at the poles of the earth or the glaciers.
- * (a) The water in the air around us is in the gaseous state (water vapour).
- (b) The water at the poles of the earth or the glaciers is in solid state (ice).
- Q5. Explain how ground water is recharged?
- * The rainwater & water from other sources such as rivers & ponds seeps through the soil & fills the empty spaces & cracks deep below the ground. The process of seeping of water into the ground is called infiltration. The groundwater thus gets recharged by this process.
- (b) List the factors affecting the water table.

Teacher's Signature : _____



When is the world water day celebrated?

22nd March.

Why do some regions of our country face floods and some face droughts at the same time?

India is a vast country and rainfall is not the same everywhere. Some regions have excessive rains while some others have very little rainfall. Excessive rains cause floods whereas the absence of rains results in droughts. Therefore some regions in our country may have floods while others may suffer from droughts at the same time.

- A: ① Increasing population.
② Rapid growth of industries
③ Growing irrigation requirements for agriculture activities
④ ~~and~~ Mismanagement of water resources.

Q6. Explain the factors responsible for the depletion of the water table.

OR

Explain how agricultural activities increased in industries & increase in population cause water table depletion

A: ① Increase in agricultural activities - Majority of farmers depend upon the rain for irrigating their crops. Irrigation system such as canals are there only in a few places. Even those these systems may suffer from lack of water. Therefore farmers have to use ground water for irrigation. Population pressure on agriculture forces increasing use of ground water day by day. This results in depletion of water table.

② Increasing population - Increasing population demands construction of houses, shops, offices, road & pavements. This decreases the open areas like parks & playgrounds. This in turn decreases the seepage of rainwater into the ground. Moreover, a huge amount of water is required for construction work. Often ground water is used for this purpose. Thus, we are consuming more water & allowing less water to seep into the ground.

Teacher's Signature : _____

③ Increasing industries help in water table depletion - Water is used by all industries, almost everything we use needs water somewhere in its production process. The number of industries is increasing rapidly. Water used by most of the industries is drawn from the ground.

Q7. Write a note on water management.

A: Due to mismanagement or wastage, a lot of water is lost every year. An organised effort to manage water resources so that water is saved for us & future generations is called water management. This can be done in three ways:-

(a) Rain water harvesting - Most of the water, we get from rainfall flows away. This is called rain water harvesting and storing of

(b) Bawaris - It is an age old practice to recharge water. People in villages store water in a large deep reservoir. Rain water is stored in such containers to supply water in summer season.

(c) Drip irrigation - A lot of water is wasted during irrigation. Drip irrigation is a technique of watering plants with narrow tubes which deliver water directly at the base of the plant.

(d) Rainwater harvesting :- Most of the water we get from rainfall flows away. This is the waste of precious natural resource. The rainwater can be used to recharge the ground water. This is referred to as Rain water harvesting.

Teacher's Signature:

Q8. Write a note on how wastage of water occurs.

Ans: The wastage of water occurs due to following reasons :-

- ① while turning on the taps, while brushing, bathing, etc.
- ② Leaking taps in buildings, stations & others places.
- ③ Unnecessary use of water like washing of floors, automobiles etc.
- ④ Overflowing of water from reservoirs tanks.

Q9. Write any 2 ways in which you can reduce the wastage of water.

Ans: The 2 ways are :-

- ① By turning off the taps while brushing.
- ② Mop the floors instead of washing.

Q10. There are ten tube wells in a lane of fifty houses. What could be the long term impact on the water table?

Ans: After taking out water for a long term use, the groundwater table may be depleted, which has an adverse effect in that lane of fifty houses.

Teacher's Signature : _____

Date _____

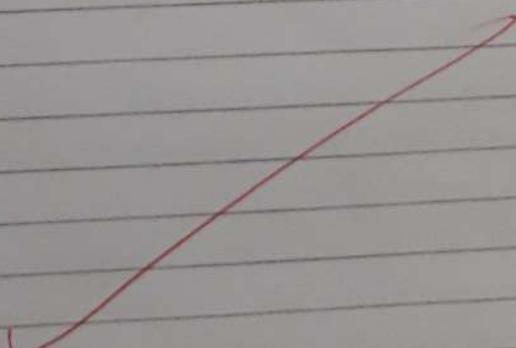
Expt. No. _____

Page No. 10

Q11. You have been asked to maintain a garden. How will you minimize the use of water?

Ans: ① By applying drip irrigation system in the garden.

② By closing the taps after watering the plants.



Chapter - 12
Reproduction in Plants

Q1.(a) Define reproduction.

A: The production of new individuals from their parents is known as reproduction.

(b) Define asexual reproduction.

A: It is a type of reproduction in which the plant gives rise to new plants without the formation of seeds.

(c) Define sexual reproduction.

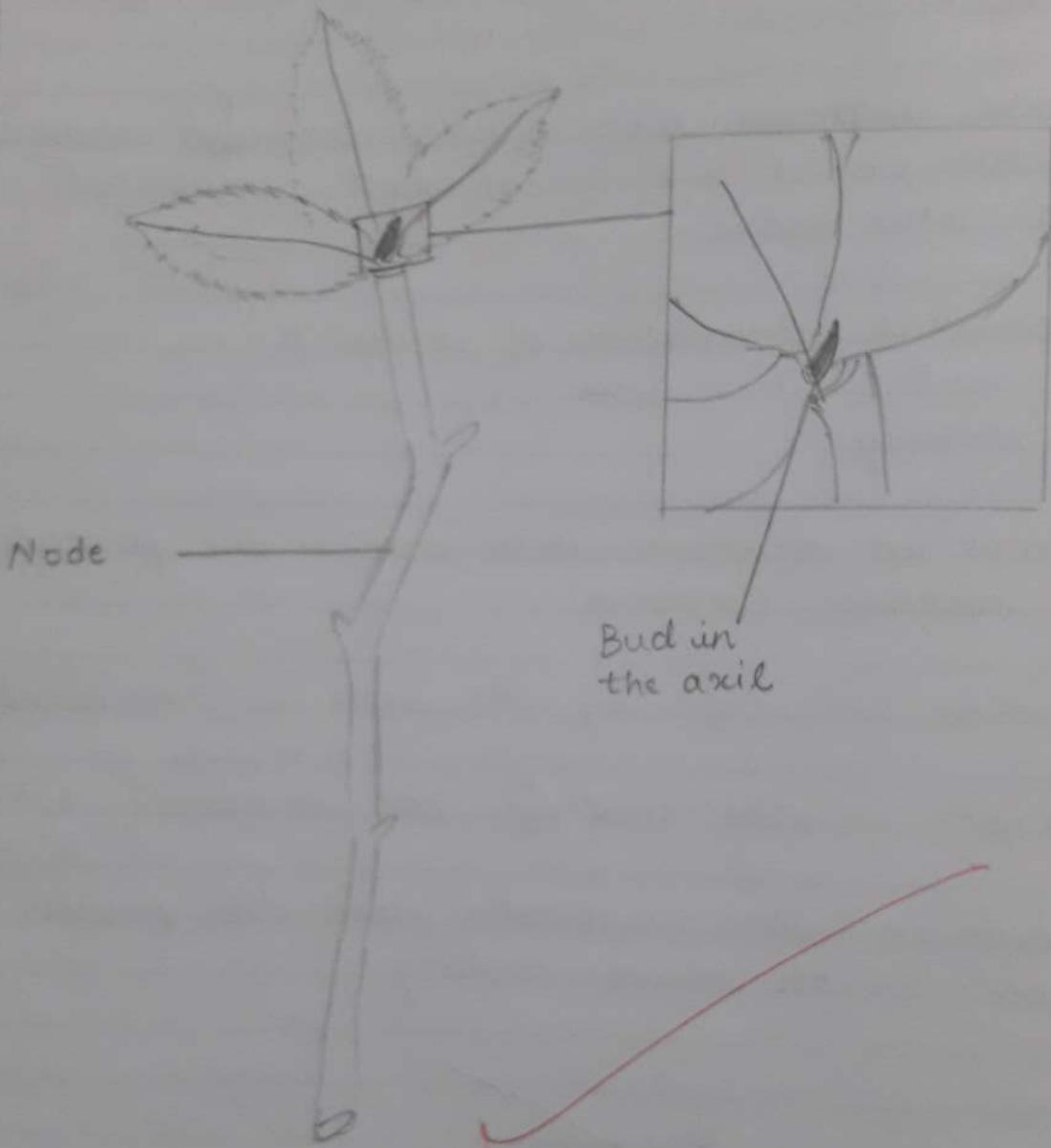
A: It is a type of reproduction in which a plant gives rise to a new plant with the formation of seeds.

(d) what is a bud?

A: The small bulb-like projection stemming out from the yeast cell is called a bud.

(e) what is pollination?

A: The transfer of pollens from the anther to the stigma of a flower is called pollination.



stem - cutting of nose

(f) What is fertilization?

A: The process of fusion of male & female gametes to form the zygote is called fertilization.

Q2. List the different methods of asexual reproduction

A: (i) Vegetative propagation

(ii) Budding

(iii) Fragmentation

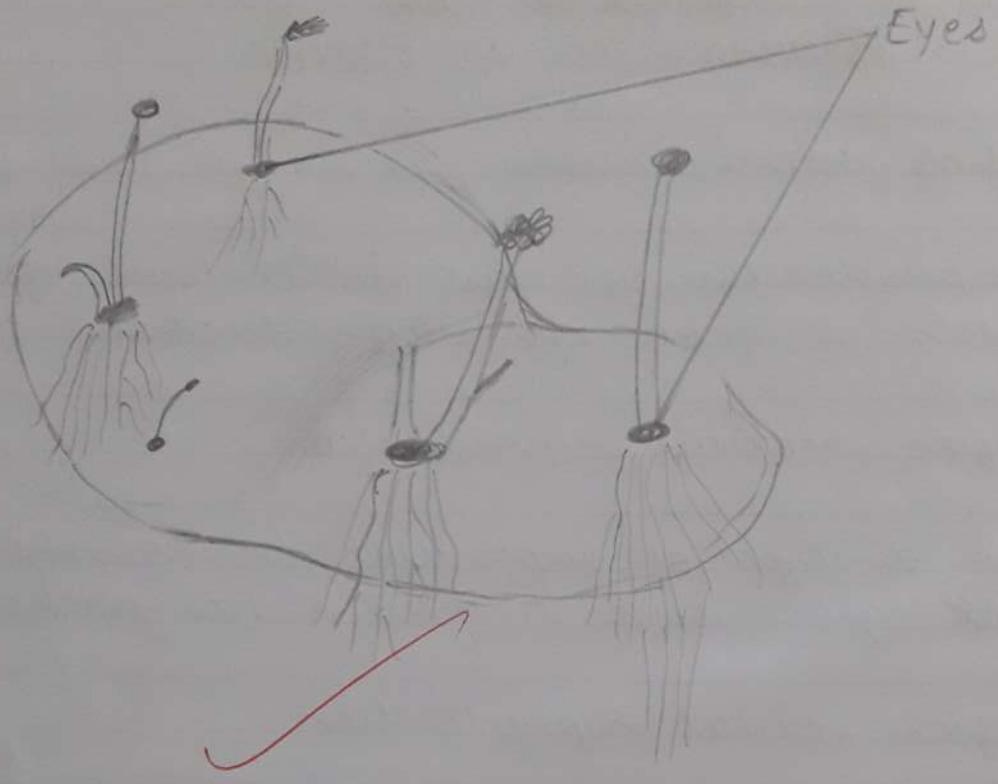
(iv) Spore formation.

Q3. Explain vegetative propagation which is a type of asexual reproduction in detail.

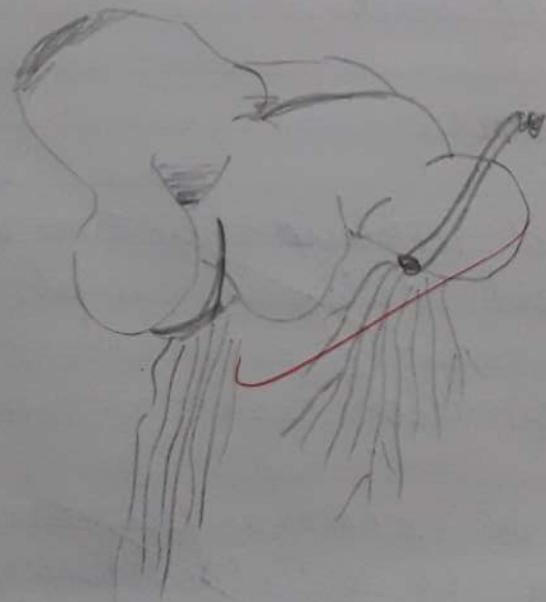
A: (i) It is a type of asexual reproduction in which new plants are produced from roots, stem, leaf, buds. Since the vegetative parts of the plant produce a new plant it is called as vegetative propagation. Eg: The roots of some plants also give rise to new plants. Sweet potato & dahlia are some examples.

(ii) Plants such as cacti produce new plants when their parts get detached from the main plant body. Each detached part can

Teacher's Signature: _____



Potato plant sprouting from an 'eye'



Ginger with new plant sprouting from it.

grow into a new plant.

- (iii) Bryophyllum (sprout leaf plant) has buds in the margin of its leaf. If a leaf of this plant falls on moist soil, each bud can give rise to new plants.
- (iv) Potato when the eyes are buried in the soil & watered regularly can give rise to a new potato plant.

Q4. Explain budding which is a type of asexual reproduction.

OR

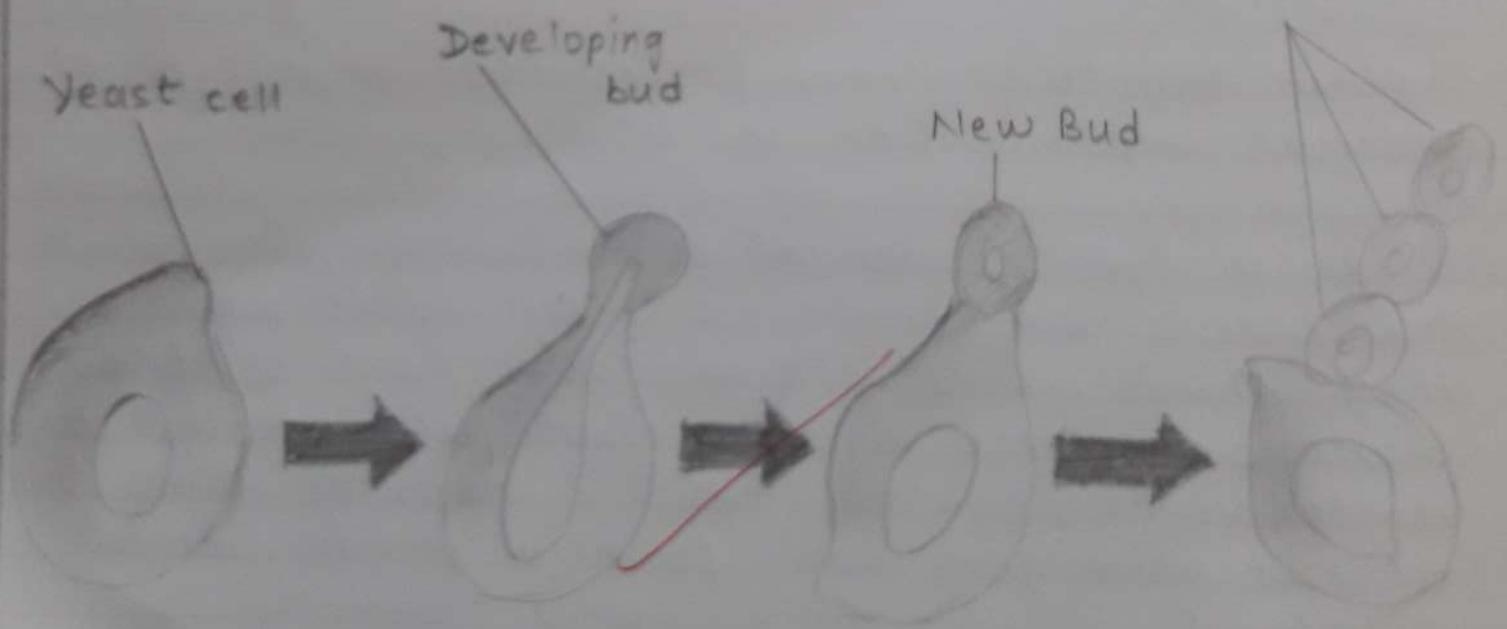
Explain the process of budding in yeast also draw the diagram.

A: Budding is a type of asexual reproduction which takes place in yeast cell. The small bulb-like projection coming out from the yeast cell is called bud. The bud gradually grows & gets detached from the parent cell & forms a new yeast cell. The new yeast cell grows, matures & produces more yeast cells. Sometimes another bud arises from the bud forming a chain of buds. If this process continues a large no. of yeast cells are produced in a short time.



Leaf of Bryophyllum with buds in the margin.

chain of buds



Reproduction in yeast by budding
(Ans - 4)

Q5(a) Explain fragmentation which is a type of asexual reproduction.

A: Slime green patches are seen in ponds & lakes or in other stagnant water bodies. These are the algae. When water & nutrients are available, algae grow & multiply rapidly by fragmentation. An alga breaks up into two or more fragments. These fragments or pieces grow into new individuals. This process continues & they cover a large area in a short period of time. Eg. Spirogyra (an alga)

(b) State the main differences between unisexual & bisexual flowers, give eg. of each.

A: Unisexual flowers.

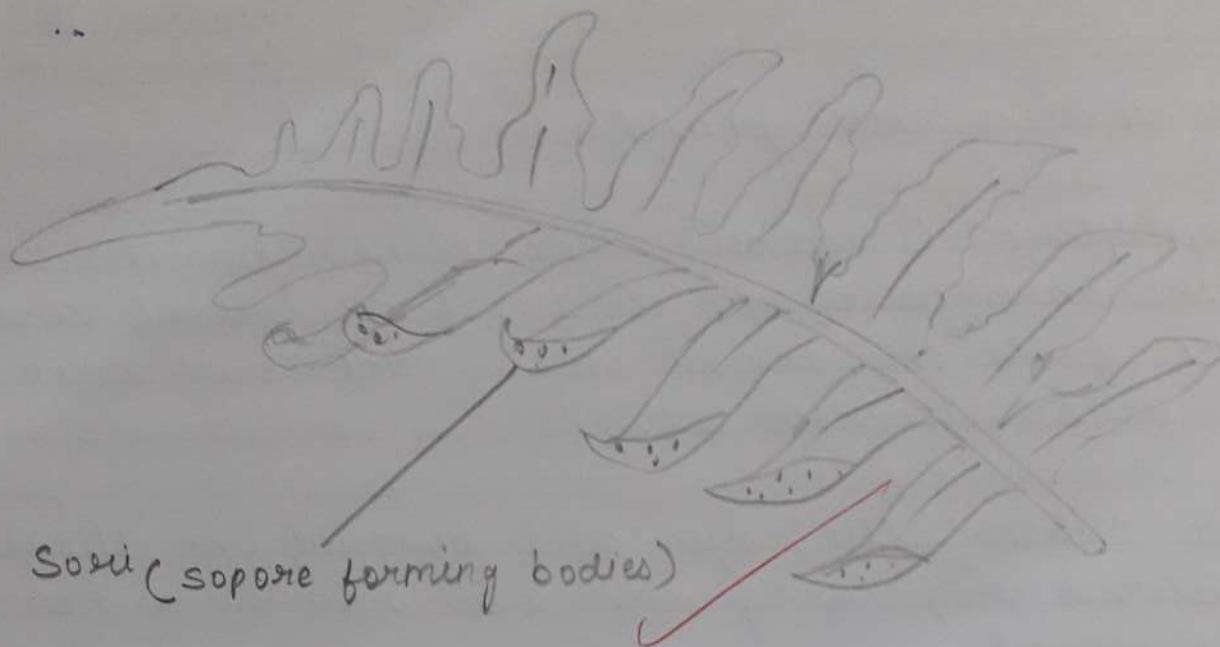
(i) The flowers which contain only the pistil or only the stamen are called unisexual.

(ii) Corn, papaya & cucumber produce unisexual flowers.

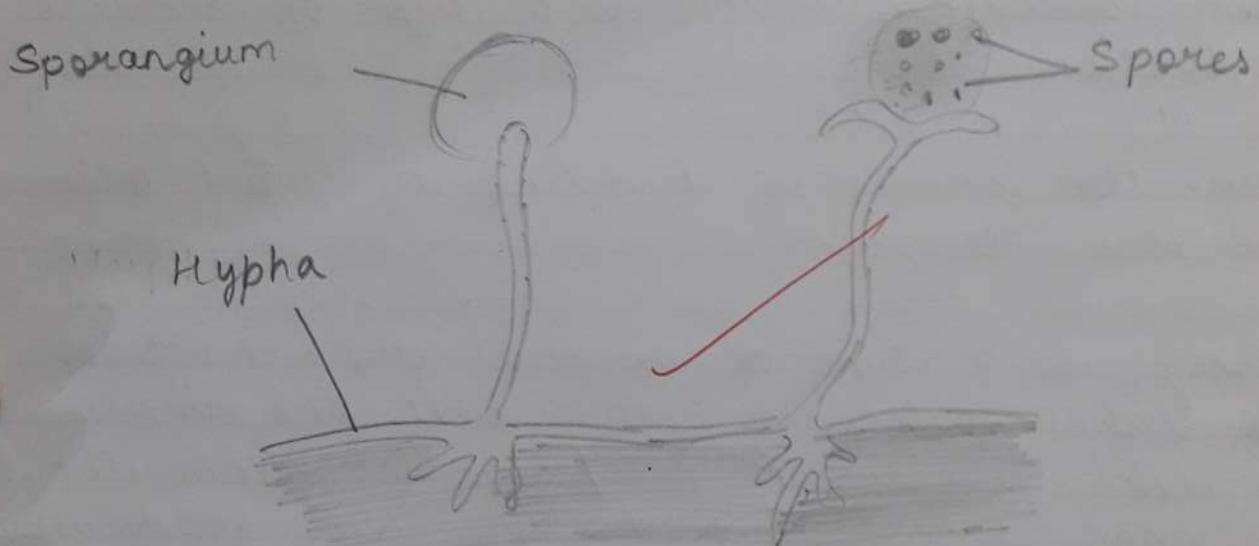
Bisexual flowers.

The flowers which contain both stamens & pistil are called bisexual flowers.

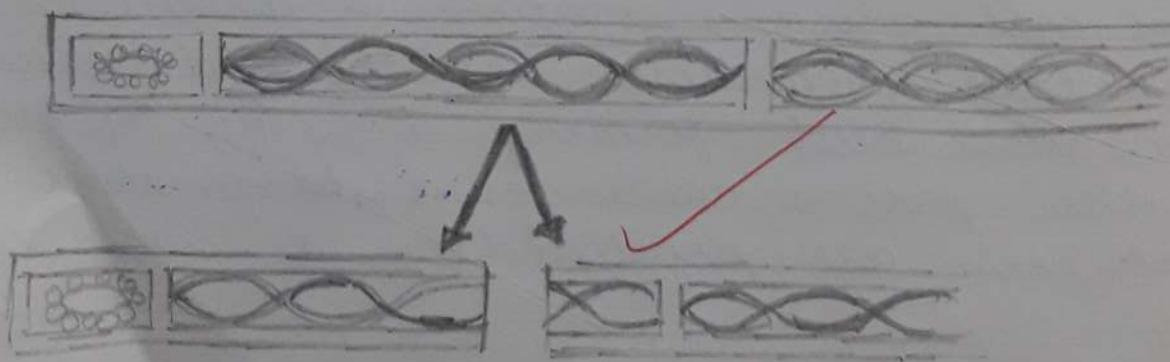
Mustard, Rose & petunia produce bisexual flowers.



Reproduction through spore formation in fern



Reproduction through spore formation in fungus



Fragmentation in spirogyra (an alga)

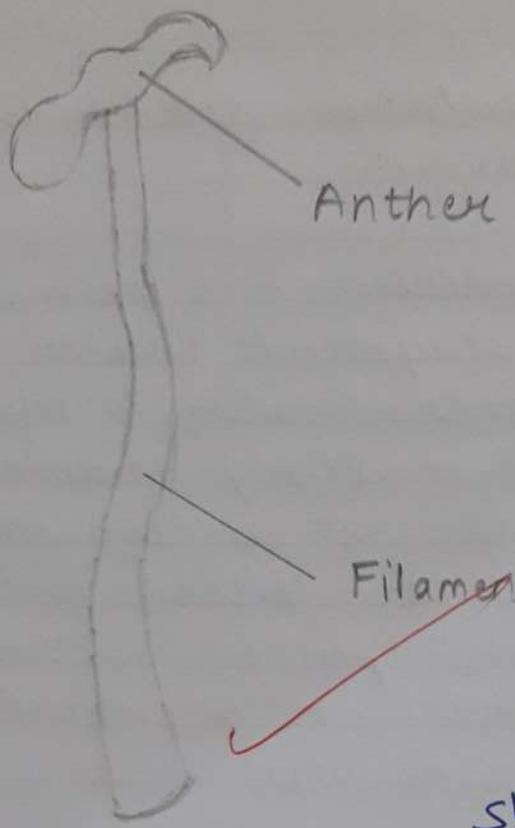
(c) what are the differences between asexual & sexual reproduction ?

i. asexual reproduction

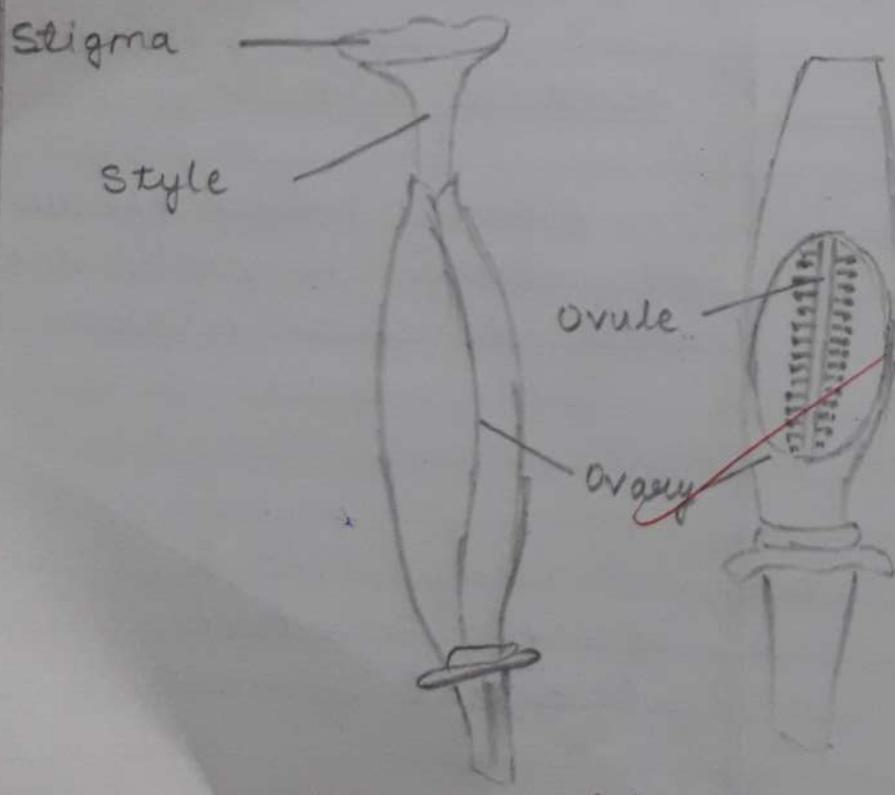
sexual reproduction

(i) New plants are produced without the production of seeds.	(i) New plants are produced with the production of seeds.
(ii) New plants are produced from roots, stem, leaves & buds.	(ii) stamens & pistil are involved in sexual reproduction
(iii) It takes less time to produce new individuals.	(iii) It takes more time to produce new individuals.
(iv) Single parent is involved.	(iv) Both the parents are involved.
(v) The new plants are exact copies of the parent & single parent.	(v) Plants produced by sexual reproduction have characters of both the plants.

Q6. (a) How does the process of fertilisation takes place in flower?



(a) Stamen



(b) Pistil

REPRODUCTIVE PARTS

Sketch the reproductive parts of a flower
fig 12.9 A & B.

Sketch the parts in a flower.
fig 12.10

(i) The cell which results after the fusion of gametes is called a zygote. The process of fusion of male & female gametes is called fertilisation. The zygote develops into an embryo. After fertilisation the ovary grows into a fruit fruit & other parts of the flower fall off. The fruit is a ^{ripened} ~~ripe~~ ovary. The seeds develop from the ovules. The seed contain an embryo enclosed in a protective seed coat.

(ii) Explain the differences between self-pollination & cross-pollination.

A) Self-pollination

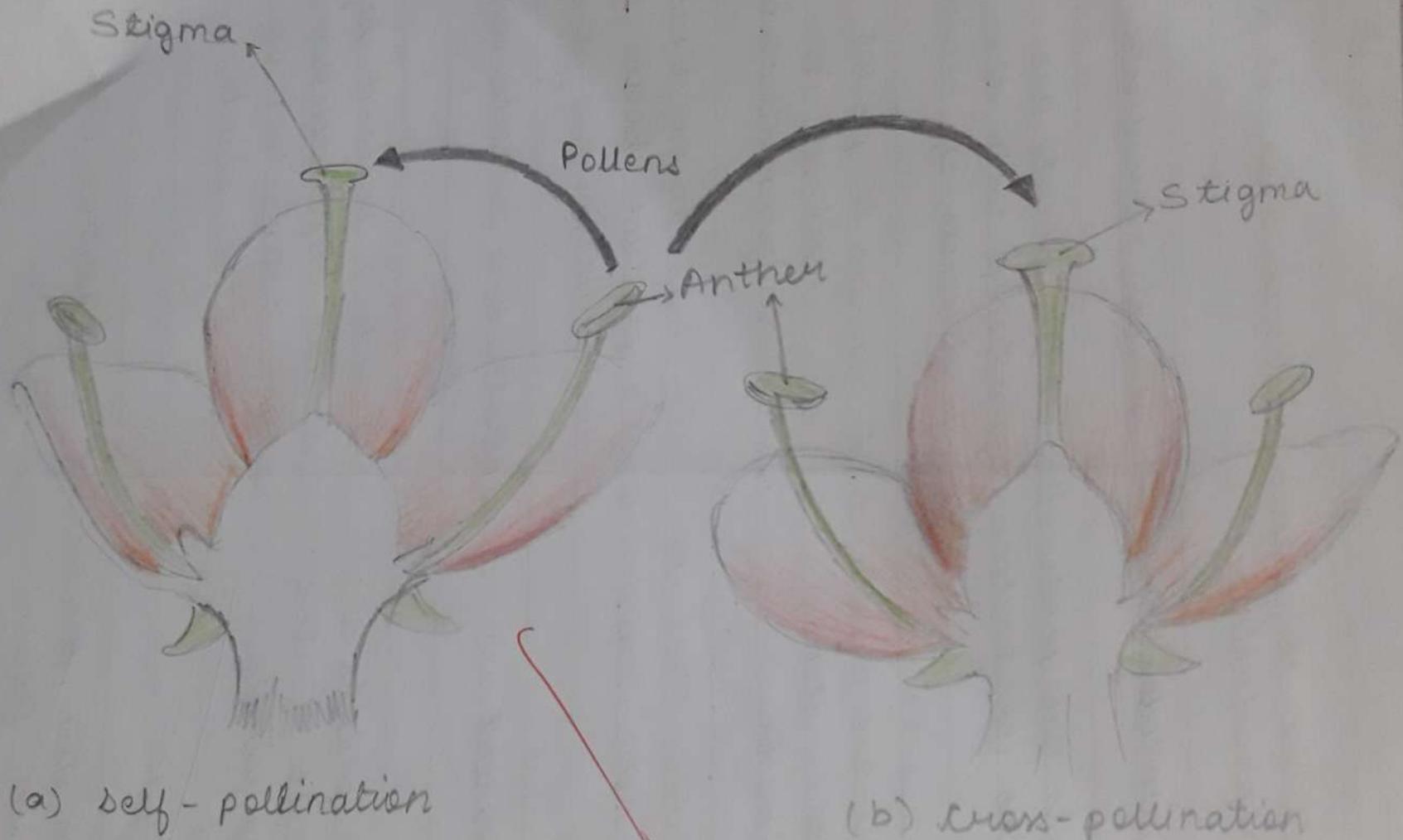
(i) The transfer of pollen from the anther to the stigma of the same flower is called self-pollination.

(ii) Self pollination occurs in bisexual flowers.
Ex. pea plant and hibiscus.

Cross-pollination

(i) If there is a transfer of pollen grain from the anther to the stigma of another flower. Then it is called as cross-pollination.

(ii) Cross-pollination occurs in both unisexual & bisexual flower.
Ex. rose



POLLINATION IN FLOWERS

Q7(a) How do plants benefit from seed dispersal?

A: Seed dispersal helps the plant to prevent over crowding & avoid competition between plants for sunlight, minerals, water & space. It also enables the plant to invade new habitats for wider distribution.

Q7(b) What is zygote?

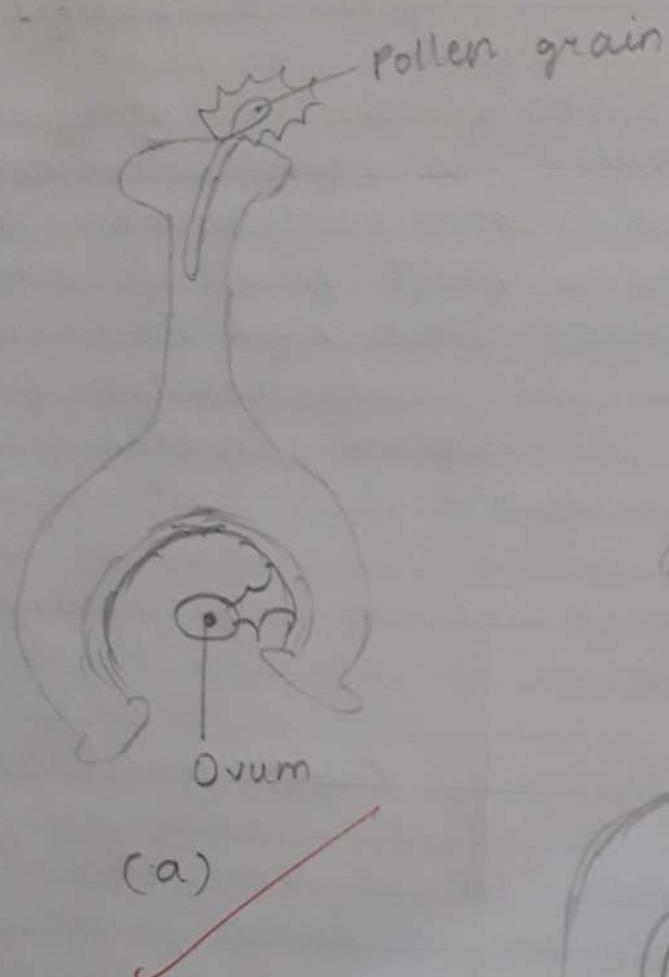
OR

What is fertilization?

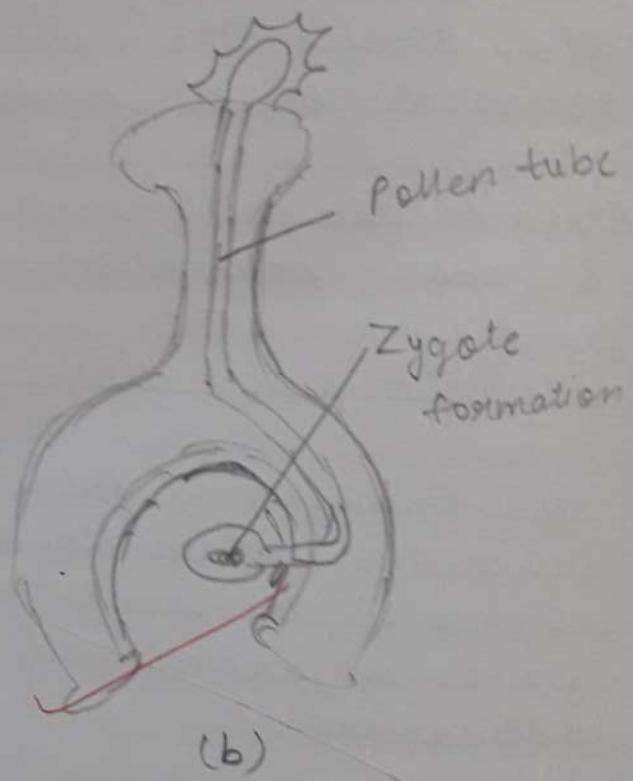
A: The cell which results after the fusion of gamets is called zygote. In sexual reproduction the male & the female gamete fuse to form a zygote. ~~The~~ The zygote develops into an embryo. The fusion of male & female gametes to form a zygote is called fertilization.

(c) Write ~~brie~~ briefly on how vegetative reproduction takes place in the potato.

A: The scars present in the fresh potato are called eyes. Cut a few pieces of potatoes & bury that in the soil. Water the pieces regularly for a few days. It gives rise to a new potato plant.



(a)



(b)

Fertilisation (zygote formation)

Q8.(a) Write briefly on how vegetative propagation takes place in Bryophyllum (sprout leaf plant)

It bryophyllum has buds in the margin of the leaf. If the leaf of this plant falls on moist soil each bud can give rise to a new plant.

(b) Draw a diagram to show spore formation in fungus.

A: Fig - 12.7

(c) Sketch the reproductive parts of the flower.

Fig - 12.9 (a) & (b)

(d) Draw the diagram of pollination in flower.

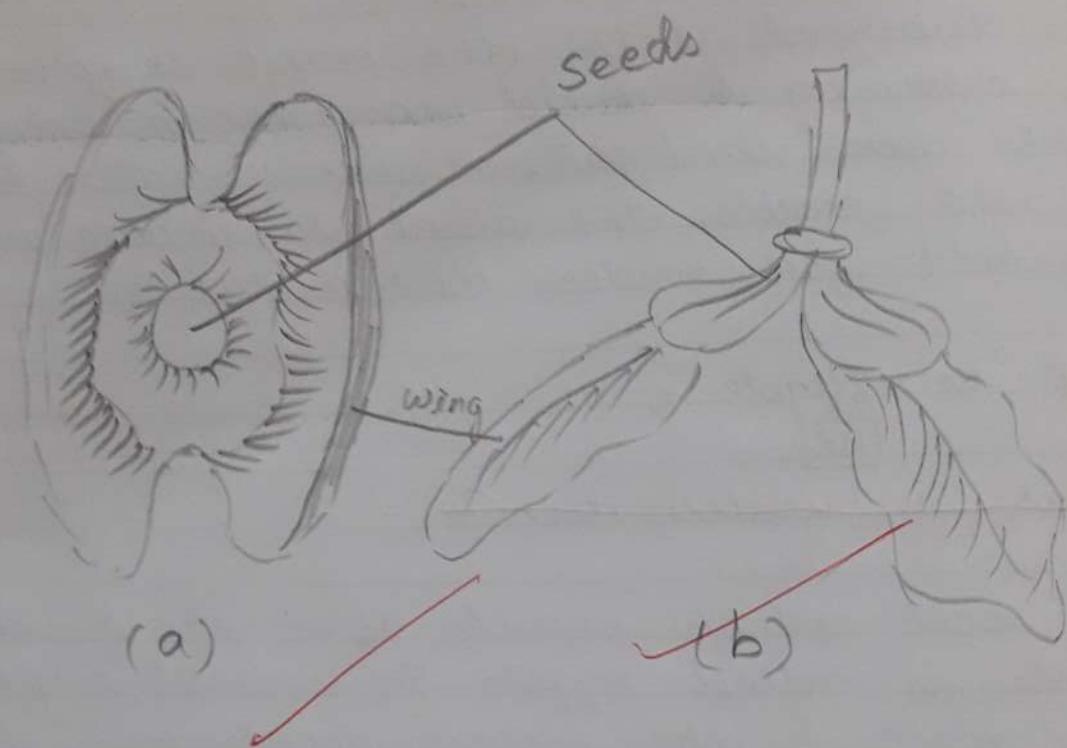
A: Fig - 12.10 (a) & (b)

(e) Draw a diagram neatly of fragmentation in Spirogyra & alga.

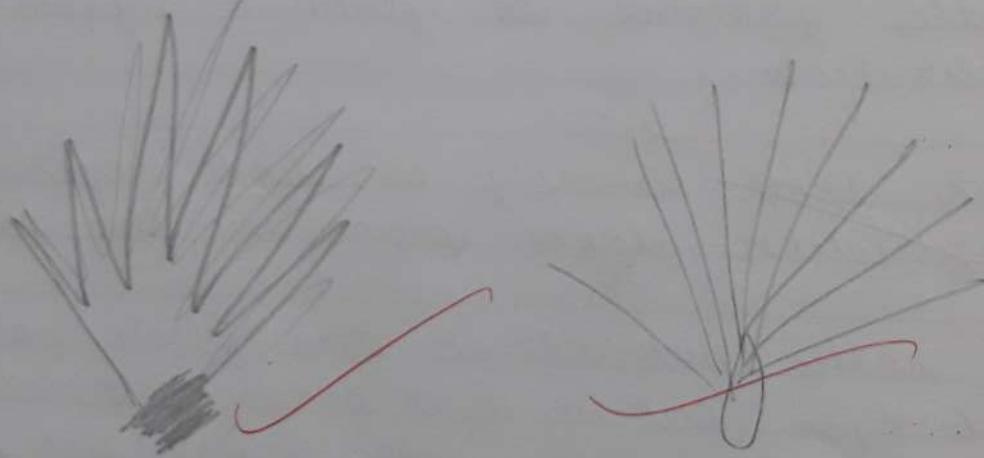
A: Fig - 12.6

(f) ~~Draw a neat labeled diagram of the leaf of bryophyllum with buds in the margin.~~

A: Fig - 12.4



seeds of (a) drumstick &
(b) maple



- (a) The hairy fruit of sunflower
(b) hairy seed of madar

g) Draw a neatly labelled diagram of the reproduction of yeast by budding.

A: Fig - 12.5

(h) Draw a neat labeled diagram of potato with an eye.

Fig - 12.2

(i) Draw a neatly labeled diagram of ginger with new plants sprouting new plants

Fig - 12.3

Q9. Explain sexual reproduction in plants.

A: Flowers are the reproductive part of the plant. Stamen is the male reproductive part & pistil is the female reproductive part. The anther of the stamen contains pollen grains which produce new male gametes. A pistil consists of style, stigma & the ovary. The ovary contains one or more ovules. The female gamete or the egg is formed in an ovule. Due to pollination, the fusion of male & female gametes takes place & a zygote is formed. The zygote later develops into an embryo.

Sexual reproduction in plants

- ① Flowers — reproductive part
- ② Stamen — male reproductive part
- ③ Pistil — female reproductive part
- ④ Anther (of stamen) $\xrightarrow{\text{contains}}$ pollen grains $\xrightarrow{\text{produce}}$ male gametes
- ⑤ Pistil $\xrightarrow{\text{consists}}$ style, stigma & ovary
- ⑥ Ovary — 1 or more ovules.
- ⑦ Female gametes (eggs) formed in ovule.
- ⑧ Pollination — fusion of male & female gametes $\xrightarrow{\text{forms}}$ zygote.
- ⑨ Later, zygote develops into an embryo.
- ⑩ Pistil $\xrightarrow{\text{consists}}$ of style, stigma, ovary, ovules

(b) Describe the various ways by which seeds are dispersed.

* same kind of plants grow at different places. This happens because seeds are dispersed at different places. Seeds & fruits of plants are carried away by wind, water & animals.

* Dispersal ^{by} air - winged seeds such as those of drumsticks & maple & light seeds of grasses or hairy seeds of oak (madar) & hairy fruits of sunflower get blown off with the wind to far away places.

* Dispersal by water - some seeds are dispersed by water. These fruits are seeds usually developed ^{with} floating ability in the form of spongy or fibrous outer coat as in coconut.

* Dispersal by animals - some seeds are dispersed by animals especially spiny seeds with hooks which get attached to the bodies of animals & are carried away to distant places. Eg - xanthium & urica.

* Other methods - some seeds are dispersed when the fruits burst with sudden jerks. The seeds are scattered far from the ^{parent} plant. This happens in case of castor & balsam.

① acornsticks

② ~~acornsticks~~

② Maple

Light seeds - ① grasses

Hairy seeds - ① oak (madam)

Hairy fruits - ① sunflower
seed.

★ Dispersal by water : coconut (spongy & fibrous outer coat)

★ Dispersal by water ^{animals} : (have hooks) ① xanthium
② ~~wepa~~

★ Other method : [fruit burst
with sudden
jumps] ① castor
② balsam.

Q10. Explain how asexual reproduction takes place in algae.

A: Slimy green patches can be seen in stagnant water bodies. These are called algae when water & nutrients are available alge grow & multiply by fragmentation. Alga breaks up into 2 or more fragments. These fragments grow into new individuals. This process continues & a large area is covered in a short time.

Q11. How does asexual reproduction take place in fungi or fungus?

A: The spores are asexual reproductive bodies. Each spore is covered by hard protective coat to withstand unfavorable conditions such as high temperature & low humidity. So they can survive for a long time. Under favorable conditions a spore germinates & develops into new individual. Eg. plant such as moss & ferns also reproduce by means of spores. The growth of fungi on a bread piece is due to spore formation.

✓ *Excellent!* G

Draw in full diptham with
neat labels

12-1

12-2

12-3

12-4

12-5

12-6

12-7

12-8

12-9 ab

12-10 ab

12-11 ab

12-12 ab

12-13 ab

12-14 ab

12-15

Chapter - 13

Date 22/11/18

Expt. No.

Motion and Time

Page No. 19

- (1) Draw a distance time graph for the following data and state the type of motion in each case.

Time in seconds.

0 sec.

1 sec.

2 sec.

3 sec.

4 sec.

5 sec

Distance in meters

0 m

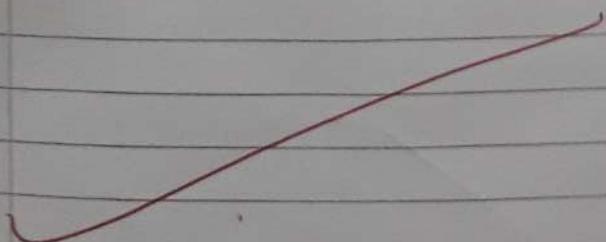
1 ① m

2 ② m

3 ③ m

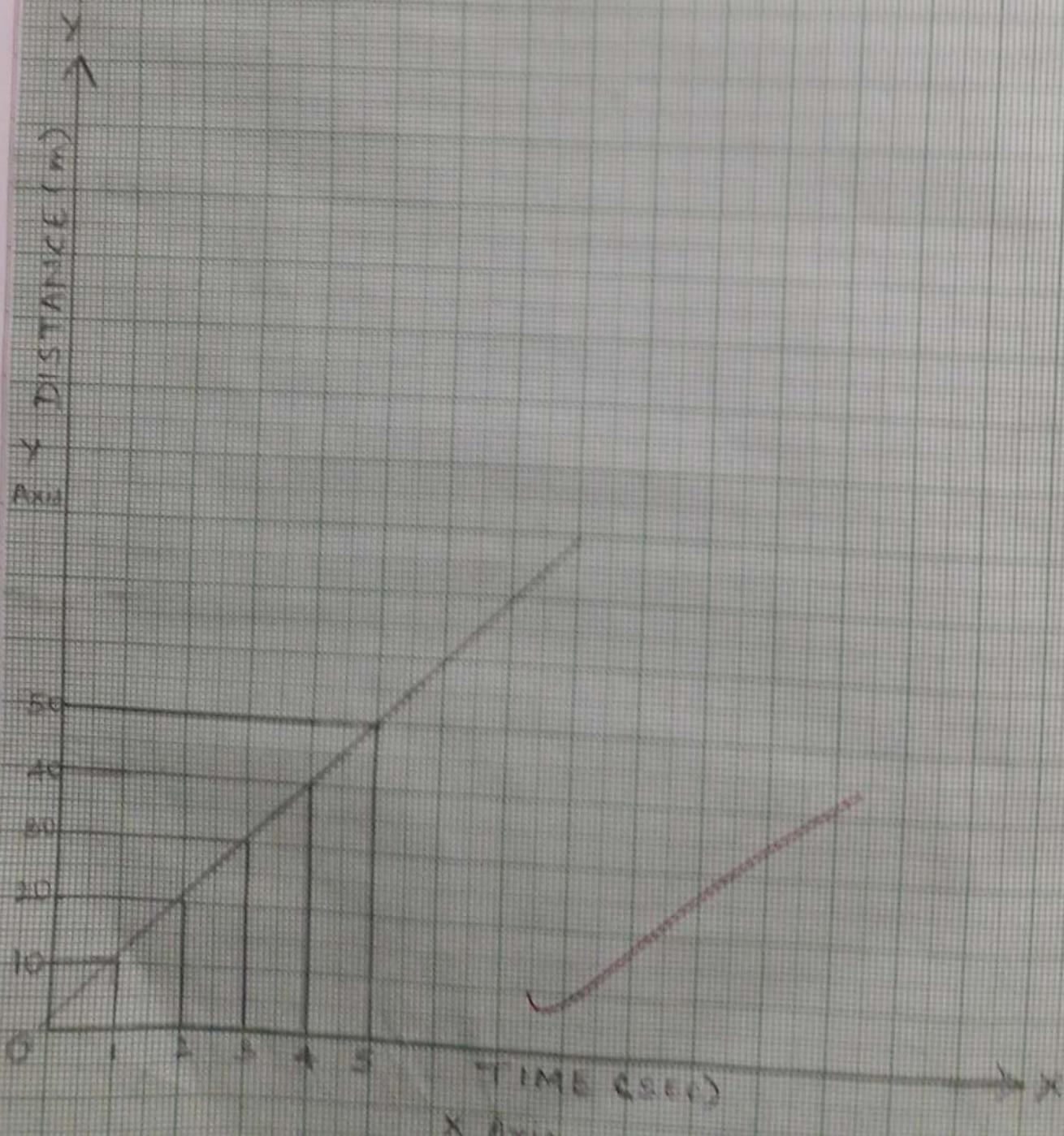
4 ④ m

5 ⑤ m



Graph showing distance-time graph
X axis = time = sec
Y axis = distance = m

SCALES



- (2) Draw a distance time graph for the following data & state the type of motion.

Time in seconds.

Distance covered in m

0 sec.

0 m

1 sec

5 m

2 sec

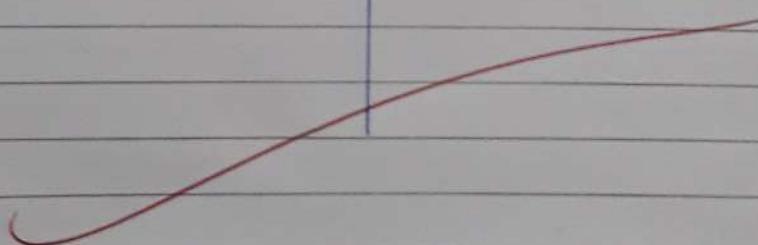
15 m

3 sec

35 m

4 sec -

60 m

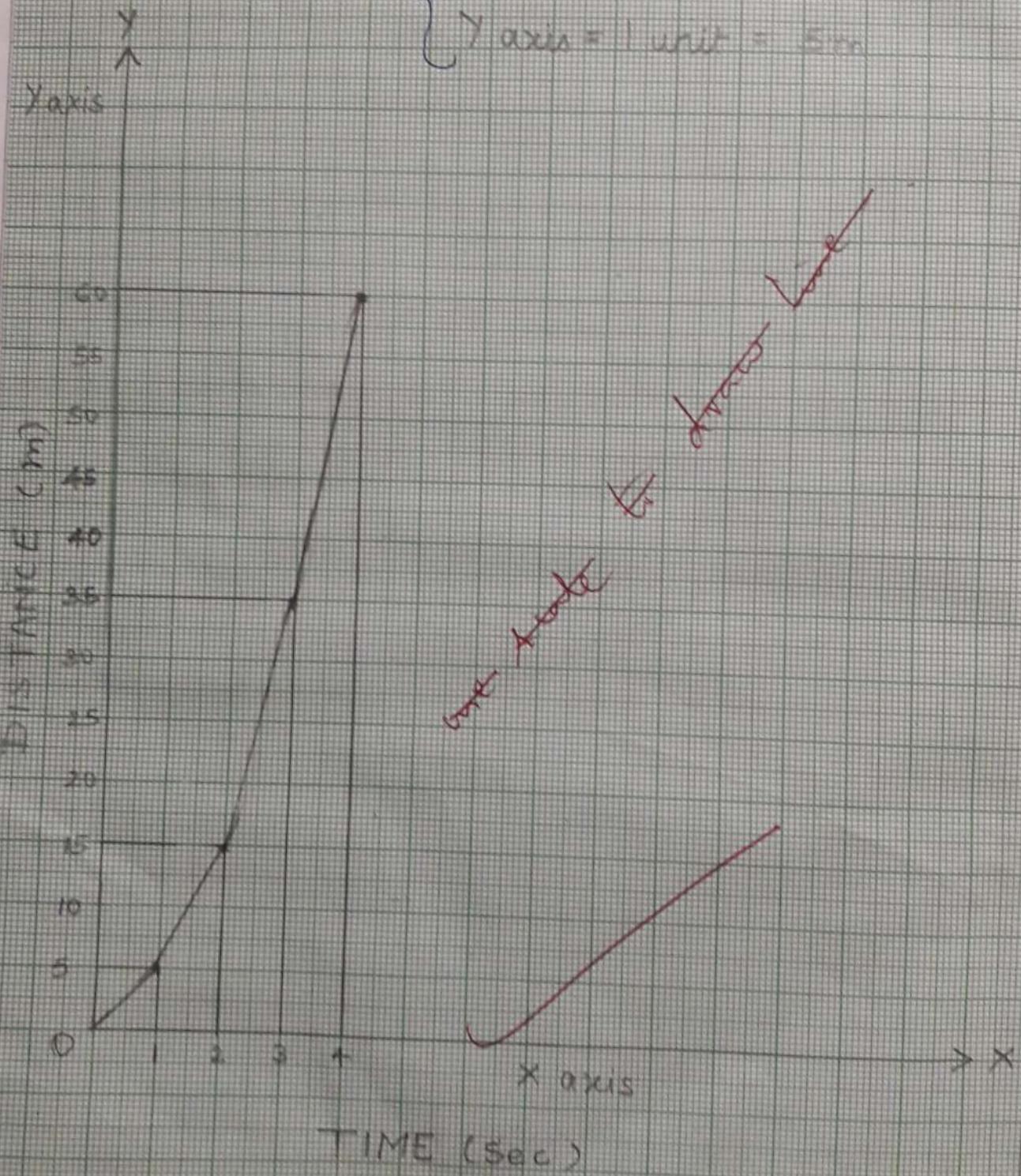


Graph showing non-uniform motion

SCALE

{ X axis = 1 unit = 1 sec

Y axis = 1 unit = 5 m



Date

Expt. No.

Page No. 21

(3) Graph showing a car parked on road side.

Time in hours.

Distance in km

1 hr

30 km

2 hr

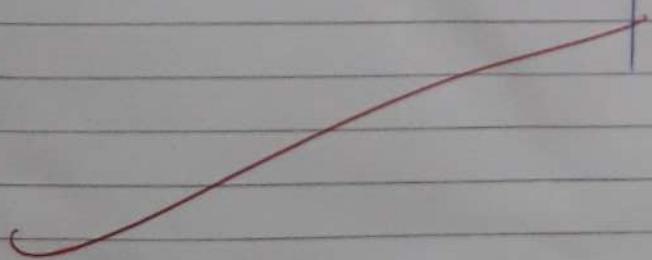
30 km

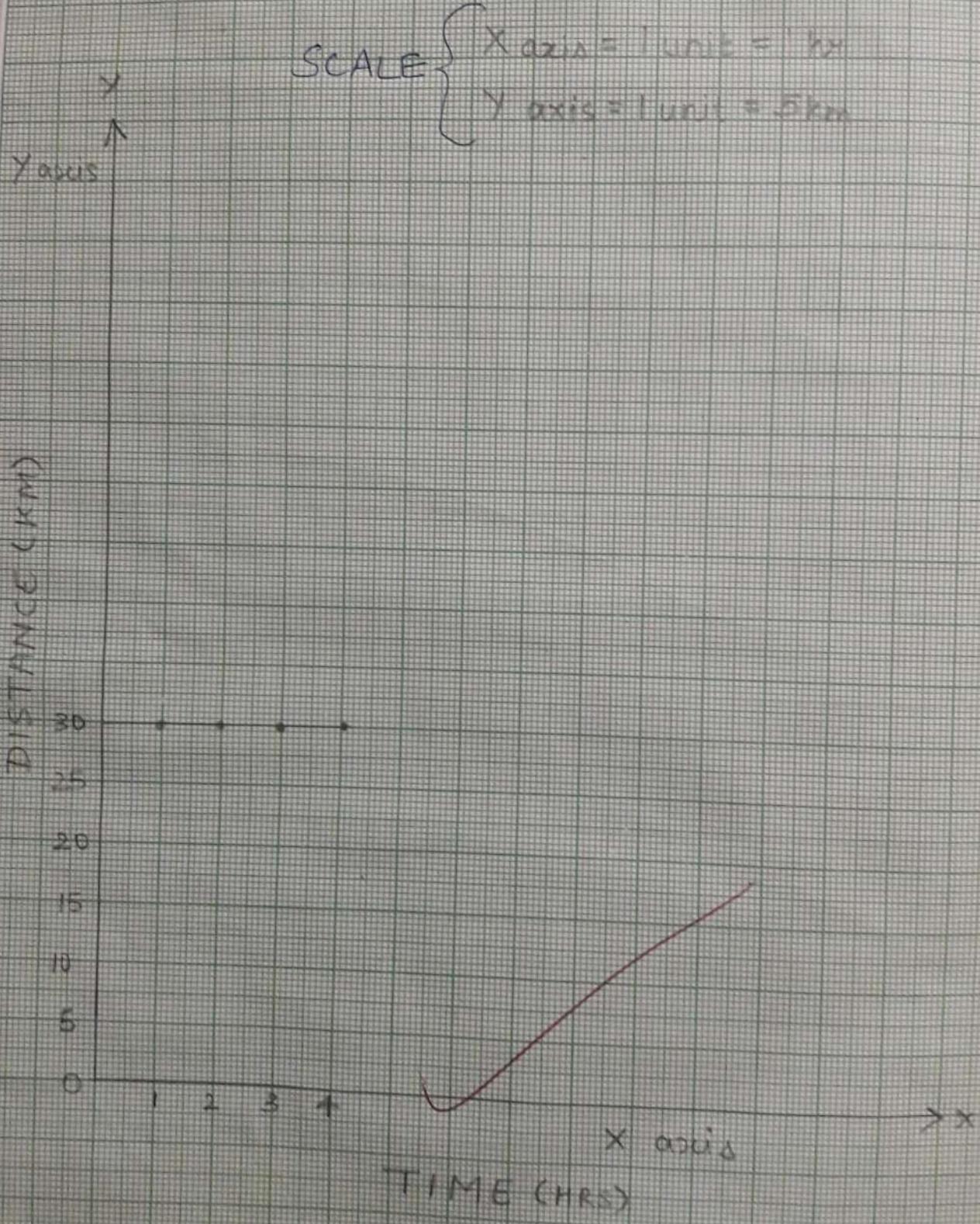
3 hr

30 km

4 hr

30 km





Q1. A car moves with a speed of 40 km/hr for 15 min. & then with a speed of 60 km/hr. for the next 15 min. Find out the total distance covered by the car.

A: Speed = 40 km/hr.

Time taken = 15 minutes.

$$\text{Distance} = \text{Speed} \times \text{Time}$$

$$= 40 \times \frac{1}{4} \text{ (one forth of an hour)}$$

$$= \frac{1}{4} \times 40$$

$$= 10 \text{ km.}$$

Another speed = 60 km/hr.

Time taken = 15 min.

$$\text{Distance} = \text{Speed} \times \text{Time}$$

$$= \frac{1}{4} \times \frac{15}{60} = 15 \text{ km}$$

$$\text{Total distance covered by the car} = 10 + 15 \\ = 25 \text{ km.}$$

Q2. What is meant by speed of an object? What is its SI unit?

A: The speed of an object means the distance covered by an object in unit time. The SI unit of speed is ~~metre~~ meter per second.

Q3. When is a simple pendulum is said to have completed one oscillation?

Teacher's Signature : _____



DELHI PUBLIC SCHOOL, BHILAI

Date : 27.01.2020
Class - VII

MONDAY TEST SUBJECT - SCIENCE

Time : 1 Hr.
M.M. 20

- Hans Christian Oersted** (01)
- Q.01 Name the scientist who discovered Magnetic Effect of Electric Current.
- Q.02 Name the instrument used in an automobile, to indicate the speed of a running vehicle & also mention the unit. **Speedometer, km/hr** (01) $\frac{26}{24}$
- Q.03 Name two ancient 'time' measuring devices. **Sundial, Waterclock etc.** (01)
- Q.04 Determine - (a) Number of seconds in a day } Show calculations $1\text{hr} \rightarrow 3600$
 } $3600 \times 24 = 86,400\text{ sec}$ (02)
(b) Number of hours in a year }
 $365 \times 24 = 8760\text{ hours}$
- Q.05 (a) What is 'overloading' in an electric circuit? **In a single point - many electric** (02)
(b) Mention two reasons of 'short circuit'. **overloading / open ends of wires friction**
- Q.06 (a) If three cells are placed side by side, then how the terminals of the cells are connected to make a battery? **IN IN OUT OUT** (02)
- (b) Draw the diagram also to show the connection
- Q.07 (a) List four conclusions which we may draw from any distance time graph.
(b) Paheli covers 2 km. distance in 30 minutes. Calculate her speed in m/s. **11 m/s** (03)
- Q.08 (a) Name two 'elements' most commonly used in electronic devices to produce 'heating effect of electricity'. **Nichrome / tungsten** (03)
(b) Why nowadays MCBs are mostly used in place in electric fuses? Write the full form of MCB. **Magnetic Circuit Breaker**
- Q.09 (a) Differentiate between 'uniform' and 'non uniform' motion, with examples. (2+3=05)
(b) Draw a neat labelled diagram of an 'electric bell' (minimum 4 labellings should be there).
Gong, hammer, iron screw, electromagnet

2006
3600
20080
20
18
16
14
12
20

A: The pendulum is said to have completed one oscillation when it's bob starting from it's ^{mean} ~~math~~ position 'O' moves to 'A' & 'B' and back to 'O'. The pendulum completes 1 oscillation when it moves from 1 extreme position 'A' to the extreme position 'B' & comes back to 'A'.

Q4. What is time period?

A: The time taken ^{by the pendulum} to complete it's oscillation is called it's time period.

Q5. What is speedometer? What is its unit?

A: The meter that reads a speed in kms. is called speedometer. km/hr .

Q6. What is odometer? What is its unit?

A: The meter that measures a distance moved by a vehicle is called odometer. kilometre

Q7. Describe an activity through which we can measure the time period of a simple pendulum.

A: Aim: To measure the time period of the simple pendulum.

- P. note:
- ① The time measuring devices used in sports can measure time intervals that are one tenth or one hundredth of a second.
 - ② Times of historical events are stated in terms of centuries and millenniums.
 - ③ The ages of stars and planets are often expressed in billions of years.

Name any two ancient time measuring devices.

Sand clock, water clock, Sundial.

No of seconds in a day

No of hours in a year.

Name any four conclusions which we may draw from any distance-time graph.

uniform motion, non uniform motion — Comparing the speed which vehicles move faster, whether the car is parked road side (not moving).

Differentiate between uniform and non-uniform motion.

What is microsecond? — One microsecond is the one millionth of a second.

What is one nanosecond? — One nanosecond is the one billionth of a second.

What is the smallest time interval that can be measured with commonly available clocks & watches?

One second.

* Materials : ^{Simple} Pendulum, stop watch

* Method :-

- ① Gently hold the ^{bob} of the pendulum & move it slightly & start the stop watch.
- ② Note down the time taken for 20 oscillation.
- ③ Divide the time taken for 20 oscillation by 20 so that we will get the time period of the pendulum.

* Observation : By dividing the time taken for 20 oscillation by 20 we will get the time period of the pendulum.

* Conclusion : Through the above activity we can measure the time period of a simple pendulum.

Q8. A simple pendulum takes 32 sec. to complete 20 oscillation. What is the time period of the pendulum?

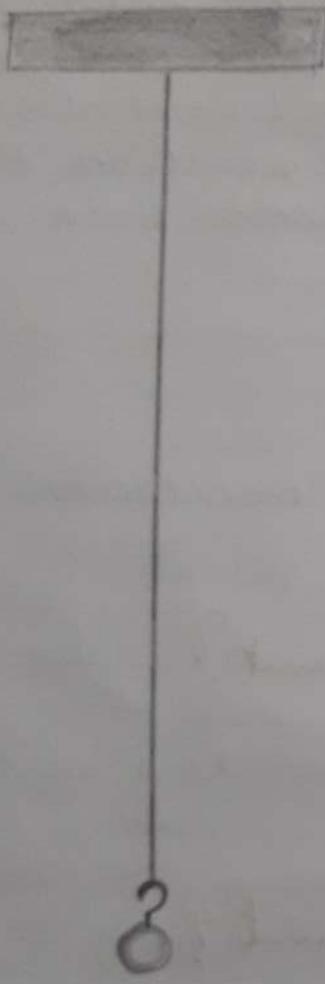
A: Number of oscillation = 20

Time taken = 32 seconds.

Time period = $\frac{\text{Time taken}}{\text{No. of oscillation}}$

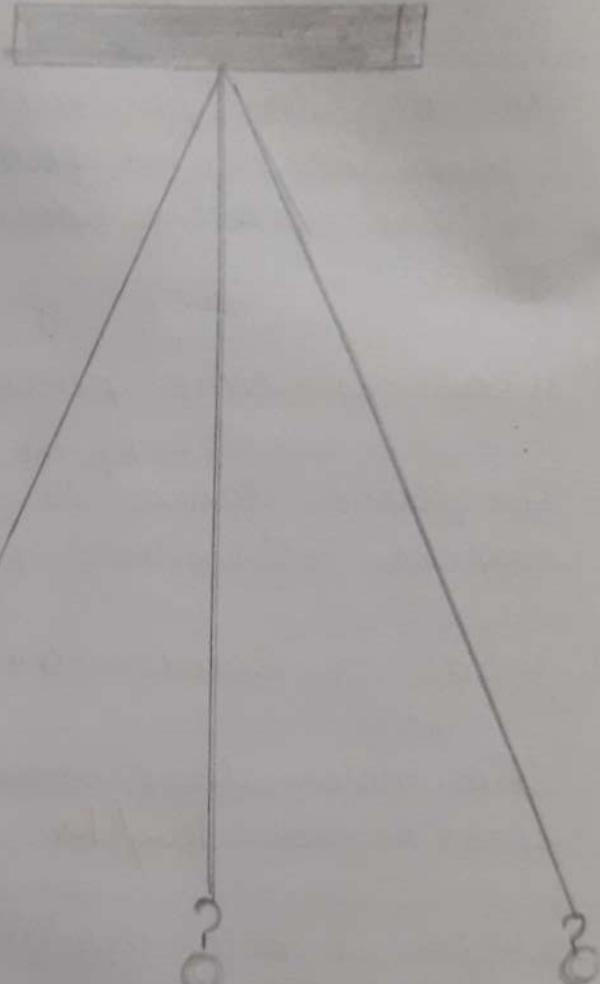
$$= \frac{32}{20} = \frac{16}{10} = 1.6 \text{ seconds.}$$

Time period = 1.6 seconds.



(a)

A simple pendulum



(b)

Defining uniform motion.

When an object is moving with a constant speed in a constant time interval it is called as

uniform motion for e.g. A car is moving 1km in one minute and 2kilometer in 2 minutes and so on.

Different positions of the bob of an oscillating simple pendulum.

Q9. Distance between 2 stations = 240 km
 It train takes 4 hrs. to cover the distance
 what is the speed of the train?

A: Distance between 2 stations = 240 km
 Time taken to cover = 4 hrs.

$$\text{Speed} = \frac{\text{Distance travelled}}{\text{Time taken}}$$

$$= \frac{240}{4} = 60 \text{ km/hr.}$$

Speed of the train = 60 km/hr.

Q10. The odometer of a car reads 57321.0 km. When the ~~stop~~ clock shows the time 8:30 am. What is the distance moved by the car if at 8:50 am the odometer reading has changed to 57336.0 km? Calculate the speed of the car in km/m . Express the speed in km/hr. also.

A: Initial readings of the odometer = 57321 km

Final reading of the odometer = 57336 km

Initial time = 8:30 am

Final time = 8:50 am

$$\begin{aligned}\text{Total reading} &= \text{Final reading} - \text{Initial reading} \\ &= 57336 \text{ km} - 57321 \text{ km} \\ &= 15 \text{ km}\end{aligned}$$

$$\begin{aligned}\text{Time taken} &= \text{final time} - \text{initial time} \\ &= 8:50 \text{ am} - 8:30 \text{ am} = 20 \text{ min.}\end{aligned}$$

Speed = Distance travelled
Time taken

$$= \frac{15}{20} = \frac{3}{4} = 0.75 \text{ m/sec.}$$

$$\begin{aligned}\text{Speed in km/hr} &= 0.75 \times 60 \text{ min. (1 hr)} \\ &= 0.75 \times 60 \\ &= 45 \text{ km/hr.}\end{aligned}$$

Q.III. Salma takes 15 min from her house to reach her school on a bicycle. If the bicycle has a speed of 2 m/s, calculate the ~~speed of~~ distance between her school & the house. ~~the car in km/min during this time~~

A: Time taken by Salma to reach the school = 15 min.

$$\text{Distance covered} = \text{Speed} = 2 \text{ m/sec.}$$

$$\text{In 1 min. distance covered} = 60 \times 2 = 120 \text{ metres.}$$

$$\begin{aligned}\text{In 15 min. distance covered} &= 120 \times 15 \\ &= 1800 \text{ meters.}\end{aligned}$$

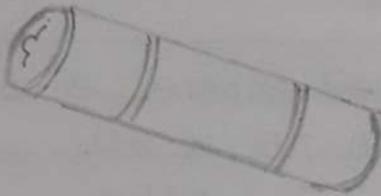
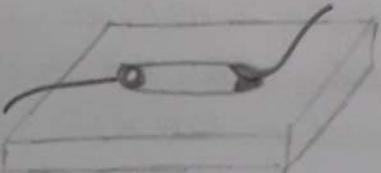
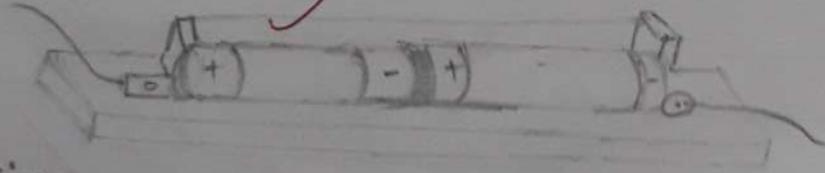
The distance between school and her house

$$\text{in km} = \frac{1800}{1000} = 1.8 \text{ km.}$$

Chapter - 14
Electric current and its effects.....

- Q1. what is meant by 'ON' and 'OFF' position of a switch in an electric circuit ? Also draw a circuit diagram using symbols in each case. (Fig 14.8 & Fig 14.9)
- A: when the switch is in 'ON' position the circuit from the positive terminal of the battery to the negative terminal is completed. The circuit is then said to be closed and the current flows instantly . When the switch is in the 'OFF' position the circuit is incomplete. The circuit is then said to be open. No current flow flows through the circuit.
- Q2. What is called a filament of the bulb? What happens when the filament is broken?
- A: In the bulb there is a thin wire called filament. It is made up of an alloy (combination of 2 or more metals) called tungsten which glows when electric current passes through the circuit of the bulb. When the filament of the bulb gets broken, electric current of the bulb also gets broken and the bulb is said to be fused. It stops glowing.

V. Gmp

S.No.	Electric component	Symbol
1.	Electric cell	
2.	Electric bulb	
3.	Switch in 'ON' position	
4.	Switch in 'OFF' position	
5.	Battery	
6.	Wire	

Q3. Draw the symbols to represent the following components of electric circuit:-

(1) Electric wire

(2) Switch in OFF position

(3) Bulb

(4) Switch in ON position

(5) Cell

(6) Battery

x: Pg 161 table 14.1

Q4. What is battery? Also name the devices where we use battery.

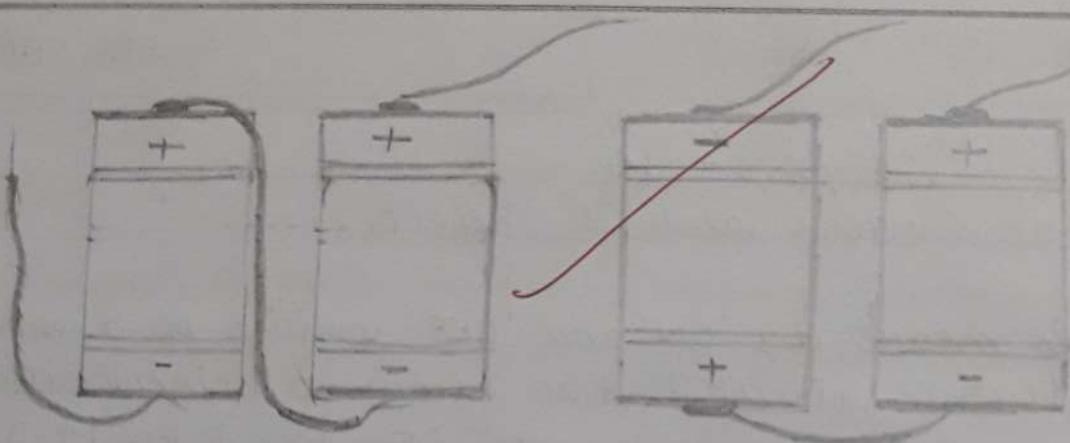
x: Positive terminal of one cell is connected to the negative terminal of another cell. Such a combination of 2 or more cells is called a battery. A few devices where we use battery are torch, toys & transistors.

Q5. Why are compact fluorescent lamps (CFLs) preferred over ordinary bulb? What does the ISI mark on it ensure? Explain.

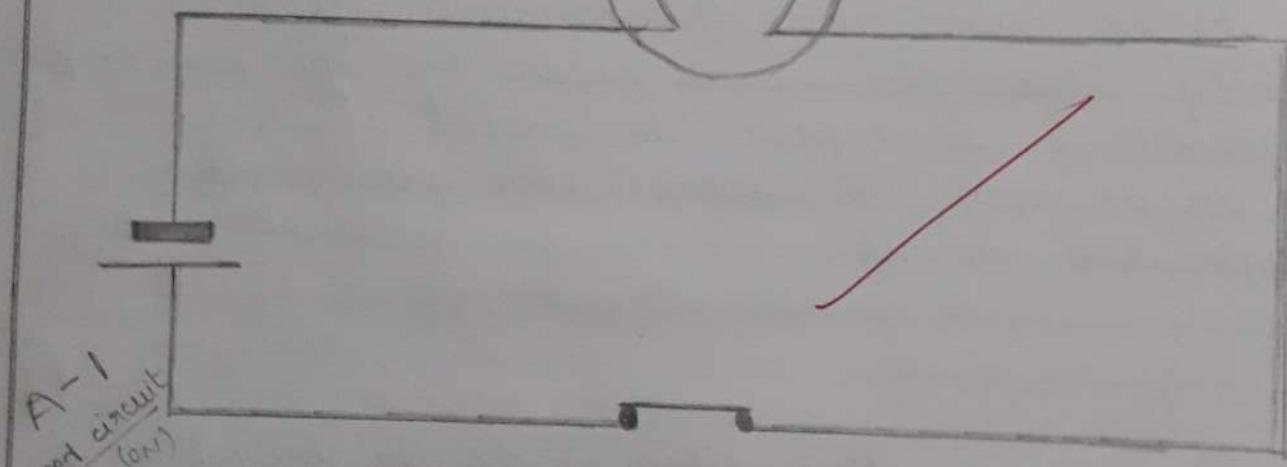
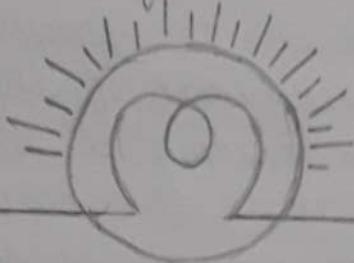
x: CFLs are preferred over ordinary bulbs because :-

① It gives more light.

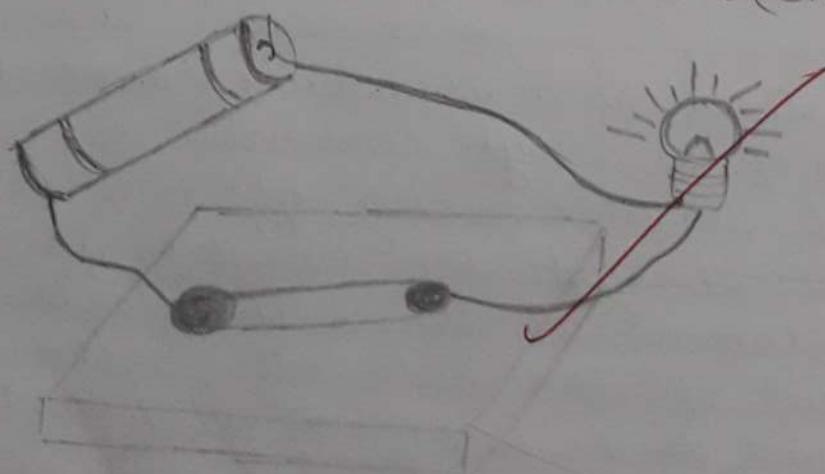
② It consumes less electricity.



Connection two cells together to make a battery.



Circuit diagram of electric circuit(shown below)



An electric circuit

③ It produces less heat.

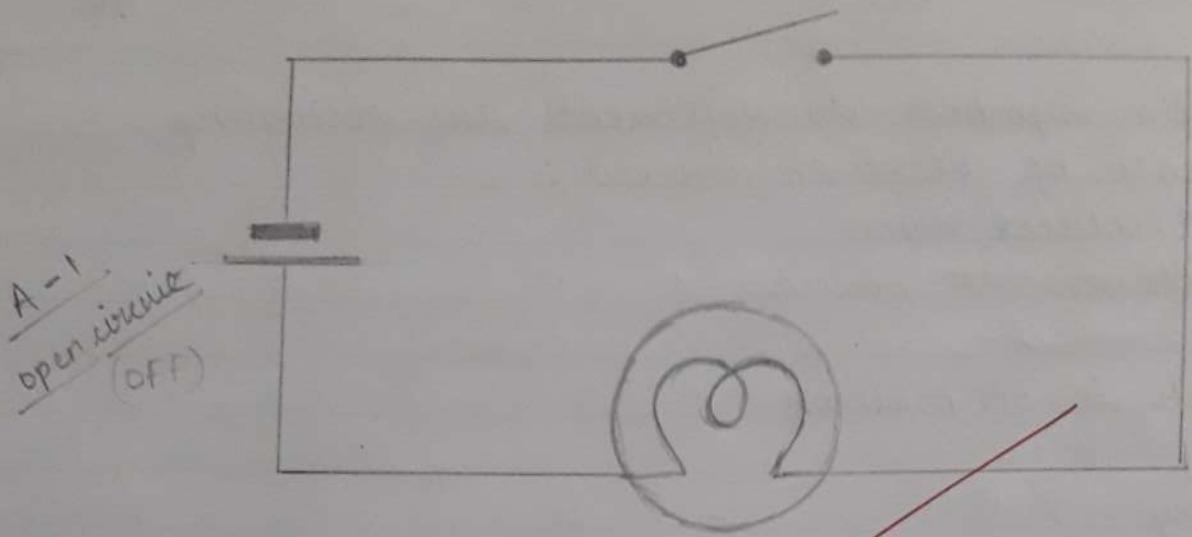
The ISI mark means Bureau of Indian Standards. The ISI mark ensures that the appliance is safe & wastage of energy is minimum.

Q6. When the current is switched 'on' through a wire, a compass needle is kept near by gets deflected from its north-south position. Explain

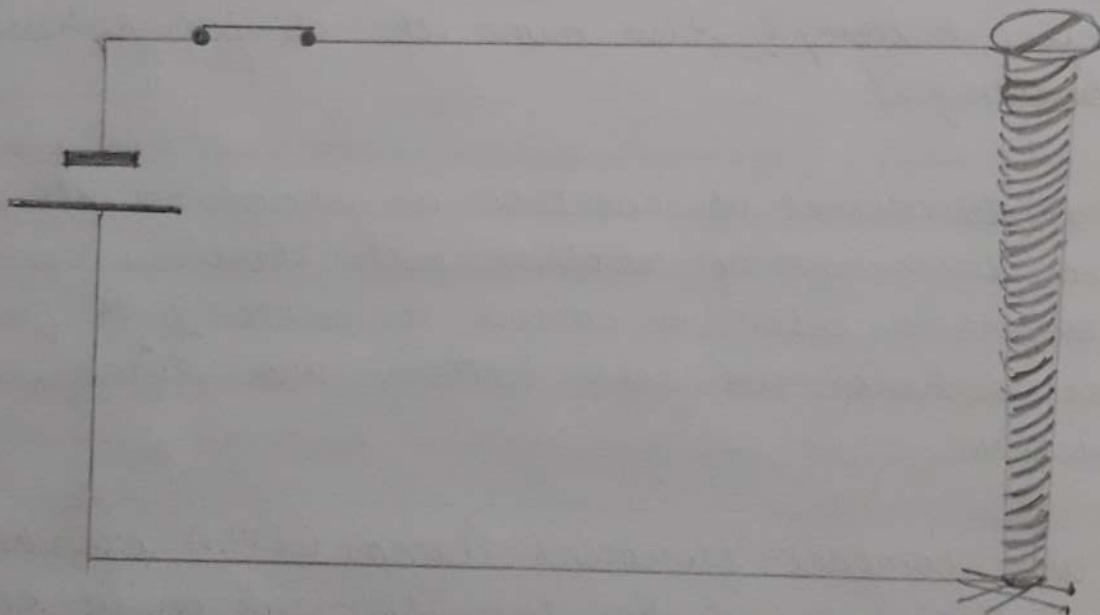
When the current is switched 'on' through a wire, a compass needle kept near by gets deflected. The needle of the compass is a tiny magnet which points in the north-south direction. When the electric current passes through a wire near a compass needle the needle gets deflected because the magnetic effect of the electricity turns the electric wire into a magnet.

Q7. What is meant by magnetic effect of electric current? Who was the 1st person to discover the effect?

When the electric current passes through a wire it behaves like a magnet. This is the magnetic effect of electric current. Hans Christian Oersted was the 1st person to discover this effect.



Another circuit diagram.



An electromagnet

Q8/ write a short note on the elements of electrical appliances.

* some electrical appliances like electrical heater, immersion heater, hot plates, etc. use the heating effect of the electrical current to work.)
Inside (Ans continued)

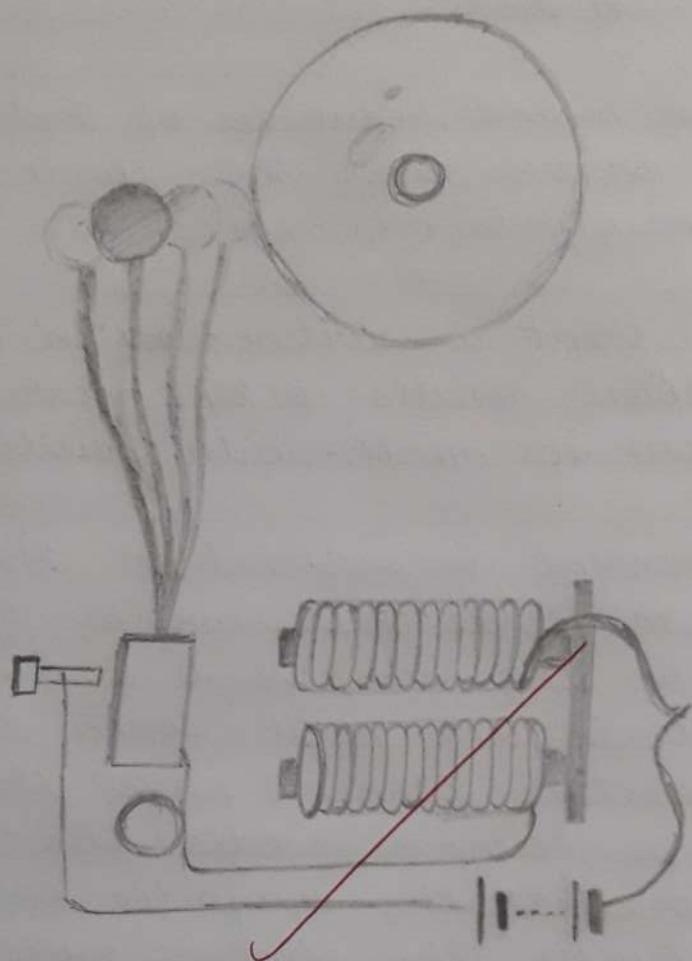
Q9. Define these appliances - a coil of wire made up of ~~nickel~~ nichrome is present which gets heated when the circuit is switched on. The coil of the wire is called an element of electrical appliances.

Q9. write a note on the heating effect of electric current.

* when an electric current flows through a wire the wire gets heated this is called the heating effect of electric current.

Q10. write a note on the miniature circuit breaker (MCB).

* These days miniature circuit breakers are increasingly being used in place of fuses. These are switches being automatically off when the current in the circuit exceeds the safe limit.



Circuit of an electric bell

What are the causes of flowing excessive current in electric circuit?

- ① Direct touching of wires. This may happen if the insulation on the wires has come off due to wear and tear. ~~(2)~~ This may cause a short circuit.
- ② Connection of ~~more~~ many devices to a single socket. This may cause overload to the circuit.

Q11 what is an electro magnet? Describe an activity to show that electric current can be used to make magnets. Draw the circuit diagram also. (Fig. 1415)

Ans: The current carrying coil of an insulated wire wrapped around the piece of iron. This is called an electro magnet.

Activity Form.

Aim: To show that electric current can be used to make the magnet.

Materials: A long iron nail, flexible wire, pins, electrical cells and switch.

Method :- ① Take around 75 cm long piece of insulated flexible wire & an iron nail of about 6 to 10 cm long.

② Wind the wire tightly around the nail in the form of a coil.

③ Connect the free ends of the wire to the terminals of a cell through a switch.

④ Place some ^{pins} near the end of the nail.
Now switch on the circuit above & observe.

Now switch on the current & observe.

Observation: The ^{pins} ~~quits~~ clinged to the ends of the nail when the current was switched on. The pins fell down when the current was switched off.

Conclusion: A piece of iron can be converted into an electro magnet by passing current through it.

Q12. Describe the construction & working of an electric bell with the help of a neatly labelled diagram.

A: An electric bell consists of a wire wound on an iron piece. The coil acts as an electro magnet. An iron ^{strip} with a hammer at one end is kept close to the electro magnet. There is a contact screw near the iron strip. When the iron strip is in contact with the screw, the current flows through the coil which becomes an electro magnet. It then pulls the iron strip. In the process, the ^{hammer} at the end of the strip bell strip strikes the gong of the bell to produce the sound.

Q13. With the help of a diagram describe the an activity to show the heating effect of electric current. (Fig- 14.1D)

Teacher's Signature: _____

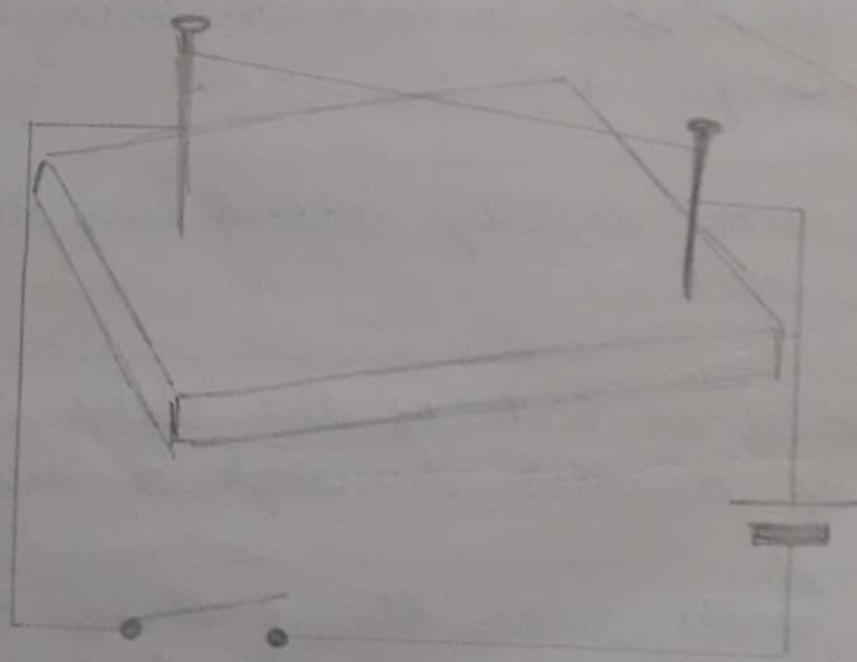


Fig. 14.10

Aim: To show the heating effect of electric current.

Materials Required: 10 cm long nichrome wire, a switch, a cell.

Method: ① Take a piece of nichrome wire & tie it to the switch. Touch the wire. Complete the circuit & after a few seconds again touch the wire. Again switch off the current ^{and touch the wire} after few minutes.

Observation: The wire gets hot when electric current passes through it.

Conclusion: The heating effect of electric current has been shown through this activity.

Q14. What kind of wire is used for making electrical fuses? Why is an ~~other~~ electric fuse termed as a safety device?

Wires are made from special materials which melt quickly when large electric current are passed through them. These kind of wires are used for making electrical fuses. There is a maximum limit on the current which can safely flow through a circuit. If by accident the current exceeds ~~the~~ safe limit, the wire may cause fire. If a proper fuse is there in

Differentiate between uniform and non-uniform motion

When the vehicle moves in a constant speed with respect to time then it is called as uniform motion eg A car covers ~~even~~ 5 metres in every 5 seconds. The distance-time graph of the uniform motion is a straight line

When the motion of the vehicle is not in a constant speed with respect to time is called as non-uniform motion eg A car covers 10 metres in the first five seconds and 20 metres in the next 5 seconds. The distance-time graph of the non-uniform motion is not a straight line

Electric bell

Labels Clog, hammer, iron screw, electromagnet

the circuit it will blow off & break the circuit. Therefore an electrical fuse is termed as a safety device.

Q15. Name any 2 effects of electric current.

A: * Heating effect of electric current - when an electric current flows through the wire the wire gets heated. It is the heating effect of electric current.

* Magnetic effect of electric current - when an electric current flows through the wire, it behaves like a magnet. A current carrying coil wrapped around a piece of iron of an insulated wire wrapped around a piece of iron is called as electro magnet.

Q16. Do you think an electro magnet can be used for separating plastic bags from a garbage heap? Explain.

A: No, the plastic bags cannot be separated from a garbage heap using an electro magnet because plastics are non-magnet substances.

Q17. Will the compass needle show deflection when the switch in the circuit shown in Fig 14.24 is closed?

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~~Qo7a) List 8 four conclusions which we may draw from any distance time graph.~~

Speed, uniform motion, non-uniform motion,

Constant speed, specific distance, time taken,

b) Pakeh covers 2km distance in 30 minutes calculate her speed in metre/sec.

2km = 2000 metres

30 mins = 60 Sec

30 mins = $30 \times 60 = 1800$ seconds

$$S = \frac{D}{T} = \frac{2000}{1800} = \frac{10}{9} = 1.1 \text{ m/sec.}$$

Q8 a) Name two elements most commonly used in electronic devices to produce heating effect of electricity.

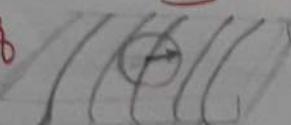
Nichrome and Tungsten.

b) Why nowadays MCBs are mostly used in place in electric fuses? Write the full form of MCB.
TO automatically trip and protect from short circuit

Q17. Full form of

MCB is

Miniature circuit breaker



There will be no deflection because there is no battery.

Q.8 An electrician is carrying out some repairs in our house. He wants to replace a fuse by a piece of wire. Would you agree? Give reasons for your response.

A: Fuse wires are made from special materials that melt quickly & breaks ^{when} the large electric current is passed beyond the safe limit of the fuse. So electrician will not be allowed to use a piece of wire. Fuses are inserted in the electrical circuit which allows the maximum limit on the current which can safely flow through a circuit.

Q.9 Zubeda made an electric circuit using a cell holder shown in Fig. 14.4, a switch and a bulb. When she put the switch in the 'ON' position the bulb did not glow. Help Zubeda in identifying the possible defects in circuit.

- A: ① She has not fix the battery in the cell holder.
② If positive & a negative terminals of the cell would not be connected to the bulb correctly.

① Name the scientist who discovered the magnetic effect of electric current
Hans Christian Oersted

② Name the instrument used at in automobile to indicate the speed of the running vehicle and also mention the unit
Speedometer km/hr.

③ Name some two ancient time measuring devices
Sundial, Sand clock, Water clock.

④ \rightarrow Determine
No. of seconds in a day }
No. of hours in a year } - show calculations
1 minute = 60 seconds.

$$60 \times 60 = 1 \text{ hour} - 60 \times 60 = 3600 \text{ seconds}$$

$$1 \text{ day} = 24 \text{ hours} = 24 \times 3600 = 86,400 \text{ sec.}$$

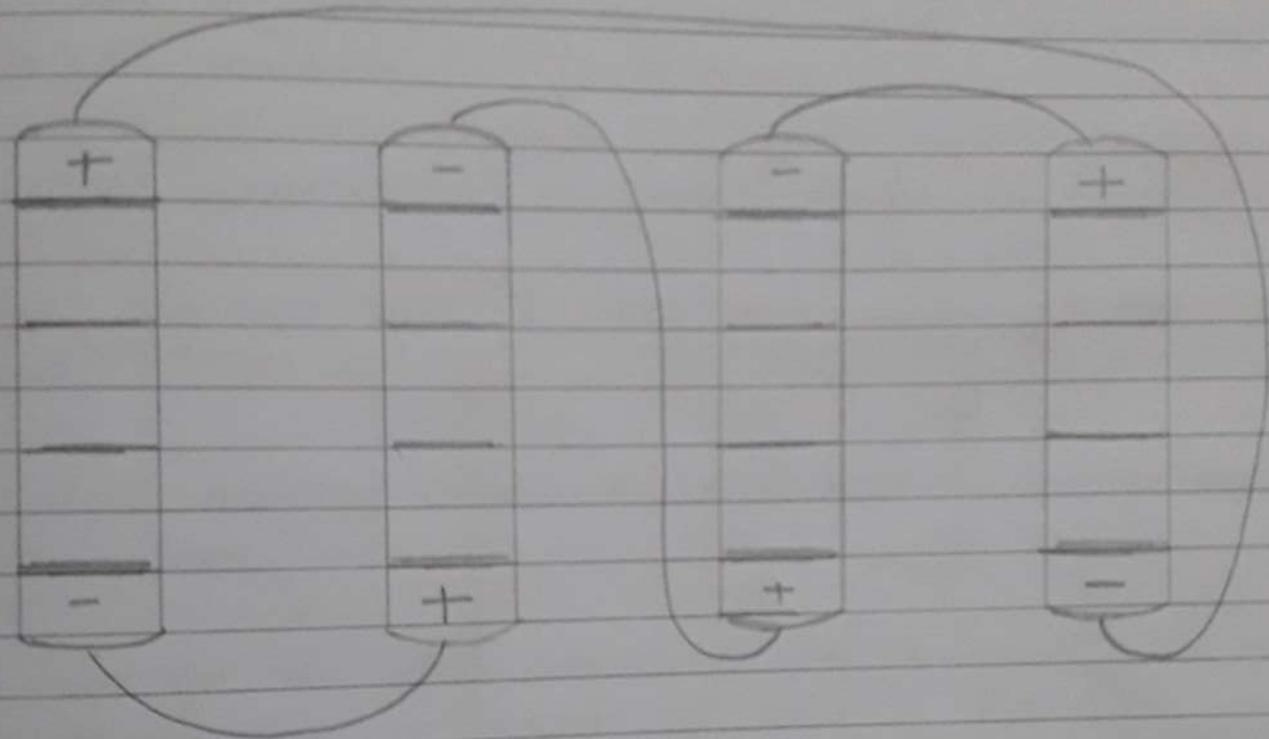
$$1 \text{ day} = 24 \text{ hrs.}$$

$$1 \text{ year} = \cancel{24 \times 365} \ 365 \text{ days.}$$

$$\begin{aligned} \text{No. of days in a year} &= 365 \times 24 \\ &= 8760 \text{ hrs.} \end{aligned}$$

Q20. Fig. 14.22 shows 4 cells fixed on a board. Draw lines to indicate their terminals with wires to make a battery of 4 cells.

A:

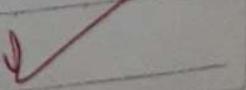


Q21. What is a battery?

A: The combination of 2 or more cells is called a battery.

Q22. What happens when current is switched on in a room heater?

A: When the current is switched on in a room heater it becomes hot.



Chapter - 15Light (1)

Q1. State the characteristics of the image formed by a plain mirror.

A: ① An image formed by a ~~plain~~ ^{plane} mirror is erect.

② It is virtual and of the same size as the object.

③ The left appears right & the right appears left in a ~~plain~~ ^{plane} mirror.

④ The image is far behind the mirror and as the object is in front of it.

Q2. Write an activity to show that only the right sides of the image is interchanged and does not appear up side down when we look in a ~~plain~~ ^{plane} mirror.

A: Aim: To show that only the sides of the image are interchanged & does not appear up side down when we look in a ~~plain~~ ^{plane} mirror.

Materials: A mirror.



Fig: Left hand appears on the right side in the mirror

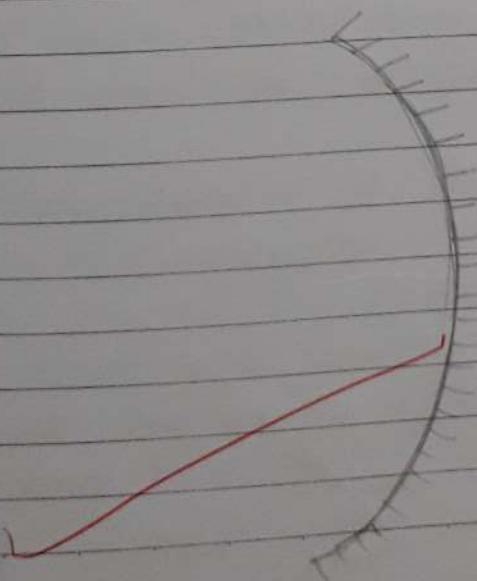
Method : ① Raise your left hand & look at the mirror. Then raise your right hand & look at the mirror.

Observation : We observe that in the plain plane mirror the right appears left & the left appears right.

Conclusion : Thus the above activity proves that in a plain mirror only the sides are interchanged & the image is not upside down.

Q3. What is concave mirror? Also write the symbol in bracket.

A: If the reflecting surface of the spherical mirror is curved inwards, it is called concave mirror. The symbol for concave mirror is



Q4. What is a convex mirror? Also write the symbol.

A: If the reflecting surface of the spherical mirror is curved outwards, it is called the convex mirror. The symbol for convex mirror is



Q5. Write an activity to show that virtual and erect image of an object can be obtained by a plane mirror.

A: Aim: To show that virtual and erect image of an object can be obtained by a plane mirror.

Materials Required - A plane mirror, a burning candle.

Method - Place the candle in front of the mirror. Try to see the flame of the candle in the plane mirror and observe

Observation - The image of the candle in the mirror was upright so it was erect. We are not able to obtain the image of the screen. So it is virtual.

Conclusion - Thus the above activity proves that the plane mirror forms an erect & virtual image.

Q6. Why is convex mirror used as rear view mirror?

A: Convex mirror can form images of objects spread over a large area so they are used as a rear view mirror in automobiles as they help the driver to see the traffic behind.

Q7. State the differences between concave & convex mirror with the help of ~~as~~ diagrams.

A: Concave Mirror

1. They are thin in the middle & thick at the end.

2. They are not used as a magnifying glass.

3. If the object is placed near it, it forms a smaller image.

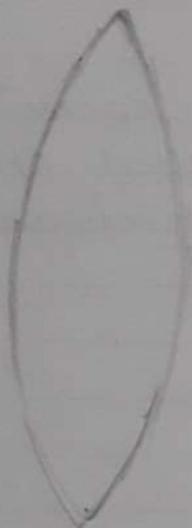
Convex Mirror

1. They are thick in the middle & narrow at the end.

2. They are used as a magnifying glass.

3. If the object is placed near it, it forms a magnifying image.

(a)



(a) A convex lens

(b)

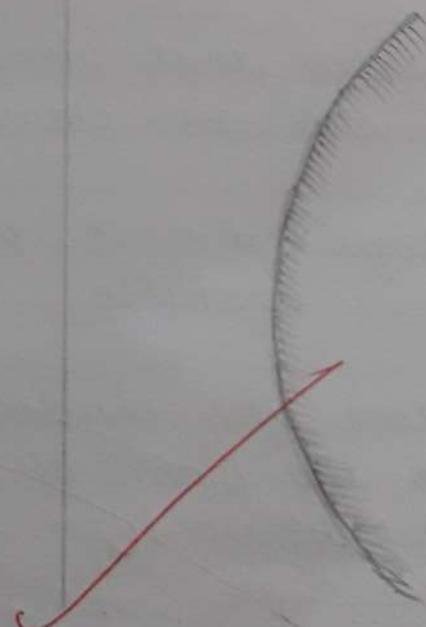


(b) A concave lens

A concave mirror



A convex mirror



Q8. What is meant by Real and virtual image? Also name the lens & mirrors that form such images.

A: Real image - When the image can be obtained within the screen, it is called as real image. Convex lens & concave mirror form real image.

Virtual image - When the image formed by a plane mirror, it cannot be obtained on a screen then it is called as virtual image. Virtual image is always obtained in a convex mirror and concave lens also form the virtual image.

Q9. Why convex lens is called a converging lens & why concave lens is called a diverging lens?

A: Convex lens is called converging lens because it converges the light falling on it. The concave lens is called a diverging lens because it diverges the light generally falling on it.

Q10. (a) Write an activity to show that variety of images are obtained by a convex lens.

A: Aim: To show that variety of images are obtained by a convex lens.

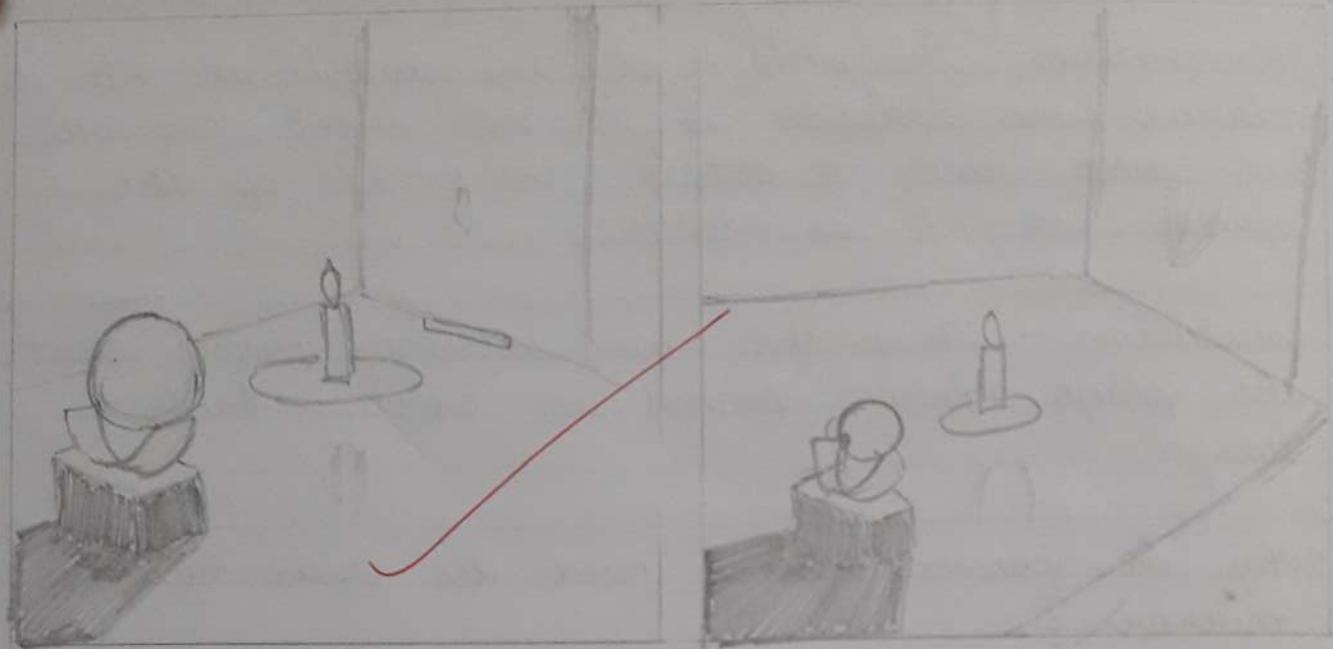
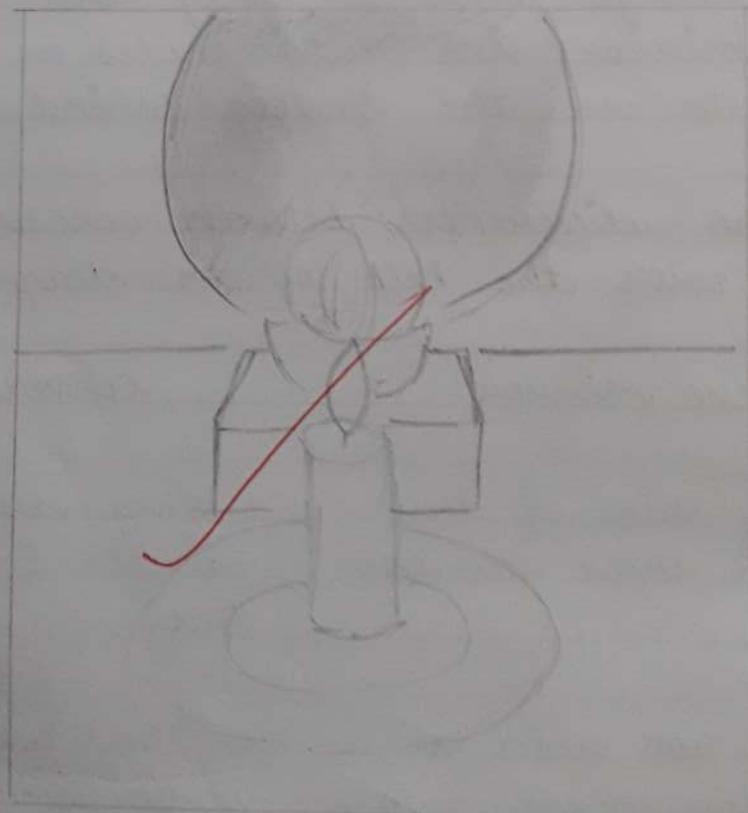


FIG: Real images formed by a concave mirror.



Virtual image formed by a concave mirror.

Materials Required : A convex lens, a stand, a candle and a screen.

Method : (1) Take a convex lens fixed on a stand & place it on a table.

- (2) Place a lighted candle at a distance of about 50 cm from the lens.
- (3) Try to obtain the image of the candle on a paper screen placed on the other side of the screen.
- (4) Try to obtain the image of the candle flame everytime on the paper screen by moving it.

Observation : In the first case, we get real & inverted image. In the second case, we get an erect virtual and magnifying image.

Conclusion : This activity shows that the variety of images formed by a convex lens.

b. Which type of image is formed by convex lens?

A: A convex lens can form real and inverted image. When the object is placed very close to lens the image formed is virtual, erect and magnified. When use to see the objects magnifying the convex lens is called magnifying glass.

Teacher's Signature : _____

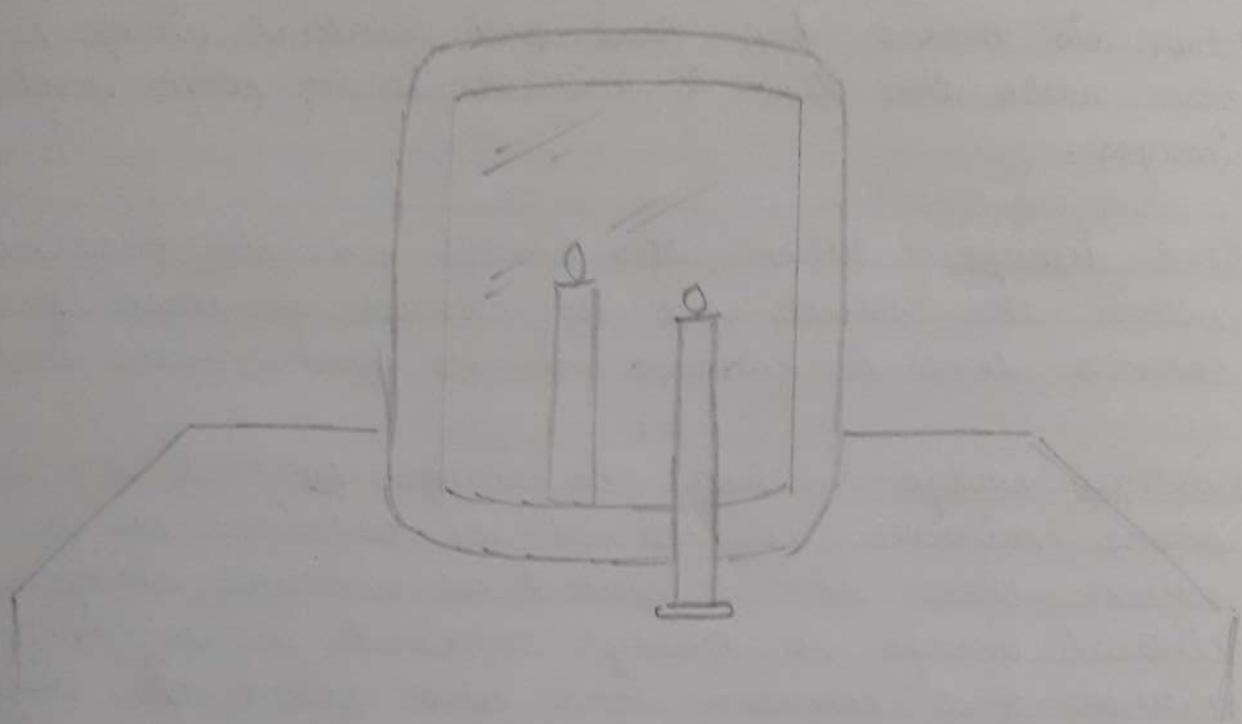
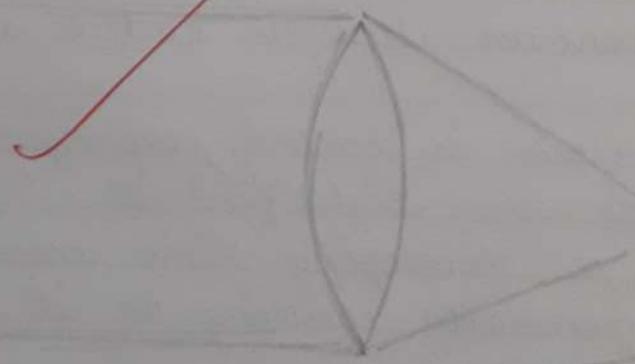
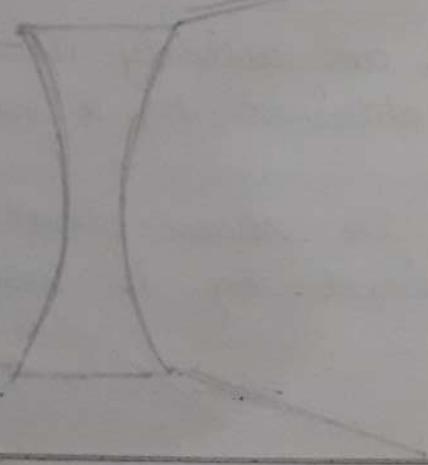


Fig: Image of a candle in a plane mirror.

(a) Convex lens



(b) Concave lens



c. what type of image is formed by a concave lens?

A: A concave lens always forms erect, virtual and smaller image than the object.

d. A virtual image larger than the object is formed by which mirror.

A: Concave mirror.

e. David is observing his image in a plane mirror & his image is 4 m away from the mirror. If he moves 1 m towards the mirror, then what will be the distance between David & image?

A: 3 m

Q11. When is a rainbow formed? Name the colours present in the rainbow in the order of their appearance.

A: Rainbow appears usually after the rain when the sun is low in the sky. The rainbow is seen as a large arc in the sky with many colours. We can see a rainbow only when our back is towards the sun. There are seven colours in the rainbow - VIBGYOR.



V for violet.

I for indigo.

B for blue.

G for green.

Y for yellow.

O for orange.

R for red.

(b) With the help of an activity show that light travels in a straight line.

Aim: To show that light travels in a straight line.

Materials Required: A rubber tube, a lighted candle.

Method: ① Take a straight rubber tube & try to see the candle through the rubber tube.

② Then take a bend rubber tube & try to see the candle again.

Observation: In the 1st case we could see the candle. In the 2nd case we cannot see the candle.

Conclusion: From the above activity we can conclude that light travels in a straight line.

✓ good

Teacher's Signature: _____

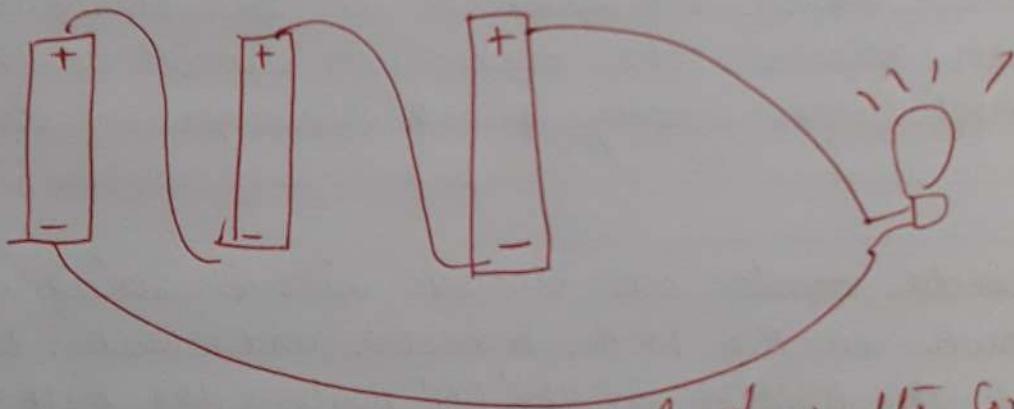
Q-5 What is overloading in a circuit?

In a single point many electrical appliances wires are connected.

(b) Mention two reasons for short circuit.

(a) overloading (2) open ends of wires friction

Q-6 If three cells are placed side by side then how the terminals of the cell connected to a battery.



Draw the diagram also to show the connection

positive terminal of 1st cell to negative terminal of 2nd cell.

positive terminal of 2nd cell to negative terminal of 3rd cell.

the terminal of the 3rd cell & the negative terminal of the 1st cell are connected to the bulb to make it glow.