



KUNAL ACADEMY

10 (English)

Science - I-(10 ALL ACTIVITIES)

DATE: 13-01-23

TIME: 3

MARKS: 207

SEAT NO:

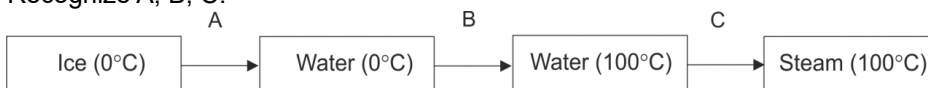
--	--	--	--	--	--	--	--	--

Q.1 Label and explain the diagram.

6

1 Identify the type of heat in the following conversion of heat and define them:

Recognize A, B, C.



Ans A = Latent heat of fusion

The amount of heat energy absorbed at constant temperature by unit mass of a solid to convert into liquid phase is called the specific latent heat of fusion.

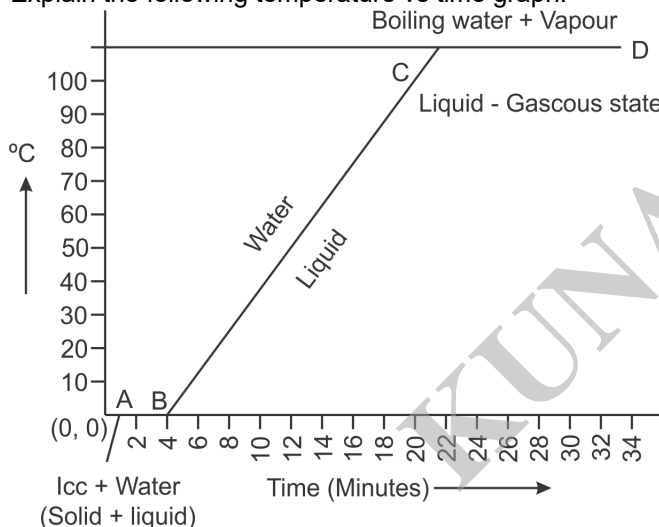
B = Specific heat capacity

The amount of heat energy required to raise the temperature of a unit mass of an object by 1°C is called the specific heat capacity.

C = Latent heat of vaporization

The amount of heat energy absorbed at constant temperature by unit mass of a liquid to convert into gaseous phase is called the specific latent heat of vaporization.

2 Explain the following temperature vs time graph.



Ans During heating ice the change in temperature with time is shown in the graph

Seg Seg AB represents conversion of ice in to water at constant temperature. During melting of ice at 0°C, AB: ice absorb heat energy and this continues till all the ice converts into water.

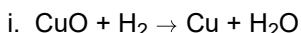
Seg once all ice is transformed into water, temperature of water starts rising it increases up to 100°C. Seg BC: BC represents rise in temperature of water from 0°C to 100°C.

Seg even though the heat energy is supplied to the water after 100°C its temperature does not rise. The CD: heat energy absorbed by water is used to break the bonds between molecules of the liquid to convert it into gaseous state.

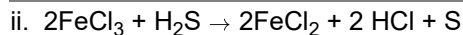
Q.2 Complete the table / chart.

60

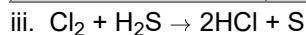
1 Complete the table :



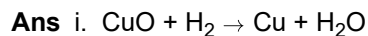
Reducing agent	Reduced product
.....



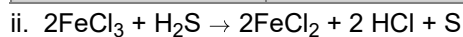
Reducing agent	Reduced product
.....



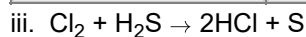
Reducing agent	Reduced product
.....



Reducing agent	Reduced product
H_2	Cu



Reducing agent	Reduced product
H_2S	2FeCl_2



Reducing agent	Reduced product
H_2S	2HCl

2 Complete the table :

Name of orbit	Range of orbit
High earth orbit
Medium earth orbit
Low earth orbit

Ans

Name of orbit	Range of orbit
High earth orbit	Height from the earth's surface is greater than 35780 km
Medium earth orbit	Height from the earth's surface is between 2000 km to 35780 km.
Low earth orbit	Height from the earth's surface is between 180 km to 2000 km

3 Complete the table :

Fe	$- 2\bar{e}$	\rightarrow		
Fe^{2+}		\rightarrow		Oxidation
Cu^{2+}		\rightarrow	Cu	

Ans

Fe	$- 2e^-$	\rightarrow	Fe^{2+}	Oxidation
Fe^{2+}	$- e^-$	\rightarrow	Fe^{3+}	Oxidation
Cu^{2+}	$+2e^-$	\rightarrow	Cu	Reduction

4 Complete the table :

Type of satellite	Function of the satellite
Communication satellite
Military satellite
Earth Observation satellite

Ans	Type of satellite	Function of the satellite
	Communication satellite	Establish communication between different location in the world through use of specific waves.
	Military satellite	Collect information for security aspects.
	Earth Observation satellite	Study of forests, deserts, oceans, polar ice on the earth's surface, exploration and management of natural resources, observation and guidance in case of natural calamities like flood and earthquake.

5 Write the electronic configuration of given elements and state your observation based on that.

Elements	Electronic Configuration
Li
Be
C
N
O
F

Ans	Elements	Electronic Configuration
	Li	2,1
	Be	2,2
	C	2,4
	N	2,5
	O	2,6
	F	2,7

Observation

Elements in some group have some number of valance electron.

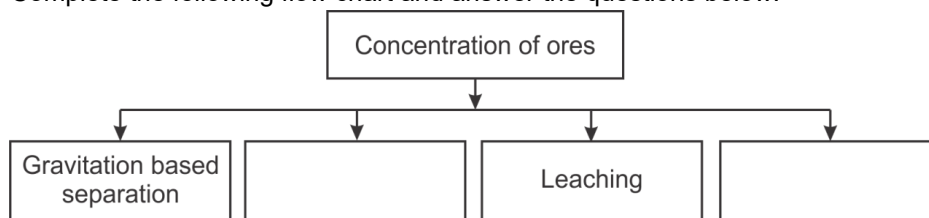
Li = 2, 1 Be = 2, 2 C = 2, 4 N = 2, 5 O = 2, 6 F= 2,7 Elements in same period have same number of shells.

6 From the list of characteristics given below. Classify the relevant into metals and non-metals.
(Conduct electricity, Acidic oxide, Discharged at anode, Brittle, Occur in solid or gaseous state, Ductile, (1,2,3) valence electrons, Discharged at cathode, Basic oxide, (5,6,7) valence electrons.)

Ans	Metals	Non-metals
i.	Conduct electricity	Acidic oxides
ii.	Ductile	Brittle
iii.	Basic oxides	Discharged at anode
iv.	(1,2,3) Valence electrons	Occur in solid or gaseous state

v.	Discharged at cathode	(5,6,7) Valence electrons.
----	-----------------------	----------------------------

7 Complete the following flow chart and answer the questions below:



- i. In which method pine oil is used?
- ii. Explain that method of concentration in brief.

Ans Magnetic separation method, froth floatation method (Flow chart expected.)

- i. In froth floatation method.
- ii. the finely ground ore is put into a big tank containing ample amount of water. Certain oils such as pine oil, eucalyptus oil, is added in the water for the formation of froth. Due to agitation a foam is formed from oil, water and air bubbles together and floats on the surface of water.

8 Complete the table :

Terms	Units of Measurement
Universal gravitational constant	.....
Weight	.....
.....	Kg
Velocity	.....
Acceleration due to gravity	.....
.....	s

Ans

Terms	Units of Measurement
Universal gravitational constant	Nm ² /kg ² or Nm ² •kg ⁻²
Weight	N or kgm/s ²
Mass	Kg
Velocity	m/s
Acceleration due to gravity	m/s ²
Time	s

9 Complete the list of the first 20 elements of the periodic table indicating groups and periods.

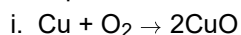
1	.....	2	13	14	15	.....	17	He
2	Li	.....	B	C	N	O	F	Ne
3	Na	Mg	Al	.....	P	S	.....	Ar
4	.....						

Ans

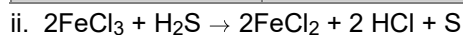
1	H	2	13	14	15	16	17	He
---	---	---	----	----	----	----	----	----

2	Li	Be	B	C	N	O	F	Ne
3	Na	Mg	Al	Si	P	S	Cl	Ar
4	K							

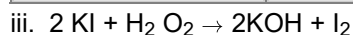
10 Complete the table :



Oxidising agent	Oxidised product
.....



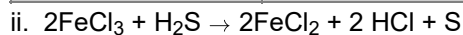
Reducing agent	Reduced product
.....



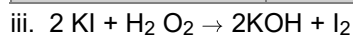
Oxidising agent	Oxidised product
.....

Ans i. $\text{Cu} + \text{O}_2 \rightarrow 2\text{CuO}$

Oxidising agent	Oxidised product
O_2	2CuO



Reducing agent	Reduced product
H_2S	S



Oxidising agent	Oxidised product
H_2O_2	I_2

11

Method to concentrate ore	Principle	Example of ore
.....	.....	Cassiterite
Froth Floatation	.....	.....
.....	It is based on chemical reaction	.....

Ans

Method to concentrate ore	Principle	Example of ore
Magnetic separation	It is based on magnetic properties of ore particles	Cassiterite
Froth Floatation	It is based hydrophilic and hydrophobic properties of ore particles.	Copper pyrite (or zinc blends)
Leaching	It is based on chemical reaction	Bauxite.

12 Complete the table

KUNAL SIR - 9049104040

SEEMA MAM - 9890463044

Type of satellite	Function of the satellite
Weather satellite
Broadcast satellite
Navigational satellite

Ans	Type of satellite	Function of the satellite
	Weather satellite	Study and prediction of the weather
	Broadcast satellite	Telecasting of the television programs
	Navigational satellite	Fix the location of any place on the earth's surface in terms of its precise latitude and longitude.

13 Complete the table :

Sr. No.	Common Name	Structural Formula	IUPAC Name
i.	Ethylene	$\text{CH}_2 = \text{CH}_2$	.....
ii.	.....	\text{CH_3COOH	Ethanoic acid
iii.	Methyl alcohol	.....	Methanol

Ans	Sr. No.	Common Name	Structural Formula	IUPAC Name
	i.	Ethylene	$\text{CH}_2 = \text{CH}_2$	Ethene
	ii.	Acetic Acid	CH_3COOH	Ethanoic acid
	iii.	Methyl alcohol	CH_3OH	Methanol

14 Match each item with the correct statement below.

i.	Halogens	a.	Elements that have properties of both metals and non-metals; located near the stair-step line.
ii.	Alkaline earth metals	b.	Reactive elements of group 17 that are poor conductors.
iii.	Transition metals	c.	Highly reactive elements that belong to group 1.
iv.	Semi conductors / metalloids	d.	Very stable due to the fact that they have a full outer most energy level.
v.	Alkali metals	e.	Elements that belong to group 3-12 and are somewhat reactive.
vi.	Noble gases	f.	Group 2 elements have two valence electrons.

Ans	i.	Halogens	Reactive elements of group 17 that are poor conductors.
	ii.	Alkaline earth metals	Group 2 elements have two valence electrons.
	iii.	Transition metals	Elements that belong to group 3-12 and are somewhat reactive.
	iv.	Semi conductors / metalloids	Elements that have properties of both metals and non metals; located near the stair step line.
	v.	Alkali metals	Highly reactive elements that belong to group 1
	vi.	Noble gases	Very stable due to the fact that they have a full outer most energy level.

15 Complete the table :

Common name	Structural formula	IUPAC Name
ethylene	.....	.....
.....	HC≡CH	.....
.....	CH ₃ -COOH	.....

Ans

Common name	Structural formula	IUPAC Name
ethylene	CH ₂ =CH ₂	Ethene
acetylene	HC≡CH	Ethyne
acetic acid	CH ₃ -COOH	Ethanoic acid

16 Complete the table for the given equation.



	On Left hand side	On right hand side
k	1	□
mn	□	1
Fe	1	□
S	□	2
O	2	□
H	□	2

Ans

	On Left hand side	On right hand
k	□ 1	□ 2
mn	□ 1	□ 1
Fe	□ 1	□ 2
S	□ 2	□ 5
O	□ 12	□ 21
H	□ 2	□ 2

17 Complete the table :



Element	Reactants	Products
	Number of atoms	Number of atoms
Na	□	2
O	□	5
H	□	□
S	1	□

Ans	Element	Reactants	Products
		Number of atoms	Number of atoms
	Na	1	2
	O	5	5
	H	3	2
	S	1	1

- 18 Complete the table :
Convex Lens

Position of object	Position of image	Size of image	Nature of image
At $2F_1$	.....	.....	Real and inverted
.....	At infinity	Very large	.....
.....	Between F_2 and $2F_2$	.....	Real and inverted

Position of object	Position of image	Size of image	Nature of image
At $2F_1$	At $2F_2$	Same size	Real and inverted
At F_1	At infinity	Very large	Real and inverted
Beyond $2F_1$	Between F_2 and $2F_2$	Smaller	Real and inverted

- 19 Complete the table :

Name Of Element	Atomic Number	Electronic Configuration			
		K	L	M	N
Hydrogen	1	-	-	-	-
Lithium	3	-	-	-	-
Sodium	11	-	-	-	-
Potassium	19	-	-	-	-

Name Of Element	Atomic Number	Electronic Configuration			
		K	L	M	N
Hydrogen	1	1	-	-	-
Lithium	3	2	1	-	-
Sodium	11	2	8	1	-
Potassium	19	2	8	8	1

- 20 Complete the table.

Name the Ray	AN =	NM =	MD =
Effects on Ray	.....	.....	.....

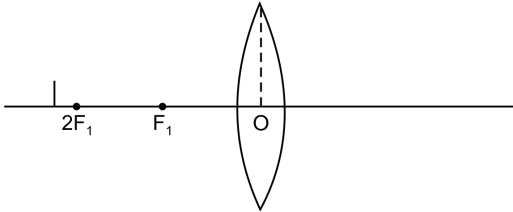
Ans

Name the Ray	AN = Incident ray	NM = Refracted ray	MD = Emergent ray
Effects on Ray	The ray bends towards the normal.	The ray bends away from the normal.	The ray does not change its direction and hence does not get refracted. i.e., $r = 0$

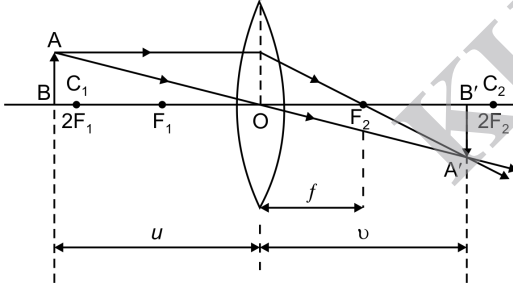
Q.3 Complete the incomplete diagram

27

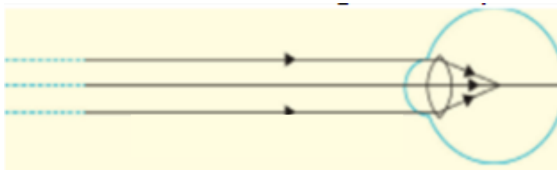
1 Object beyond $2F_1$.



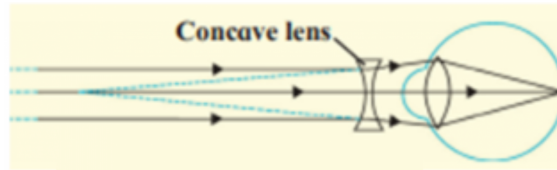
Ans



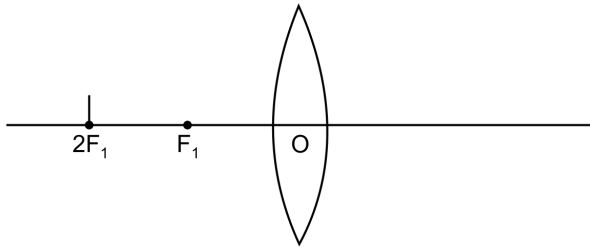
2 Draw the corrected figure of eye for following defective eye :



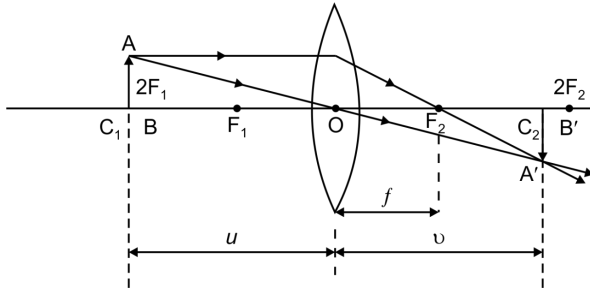
Ans



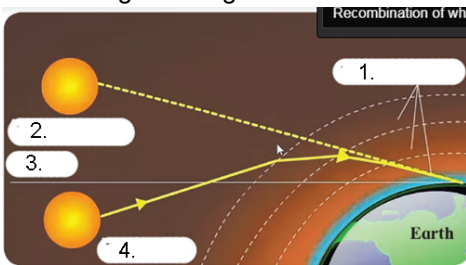
3



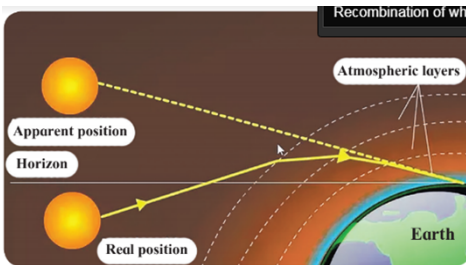
Ans



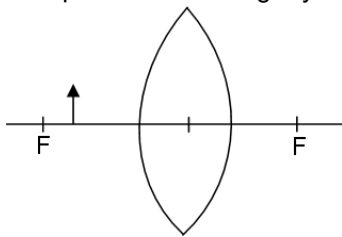
4 Label the given diagram.



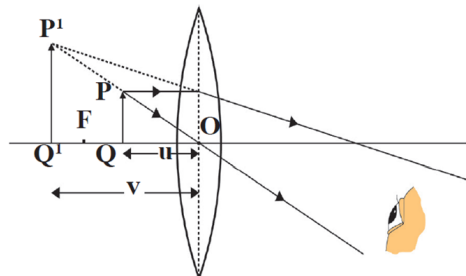
Ans



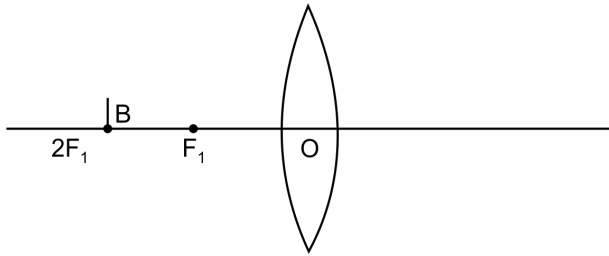
5 Complete the following ray diagram and show the position of final image



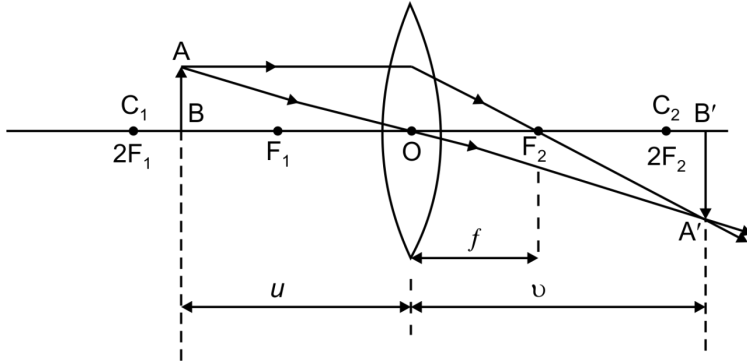
Ans



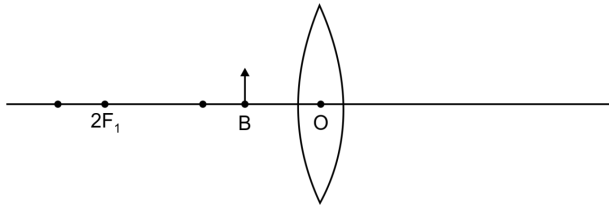
6



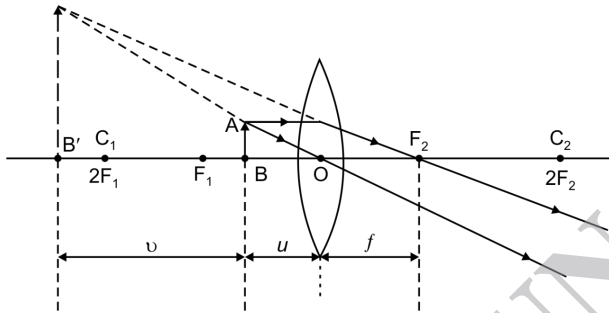
Ans



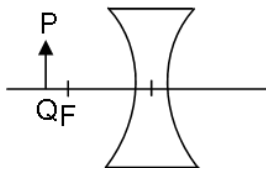
7



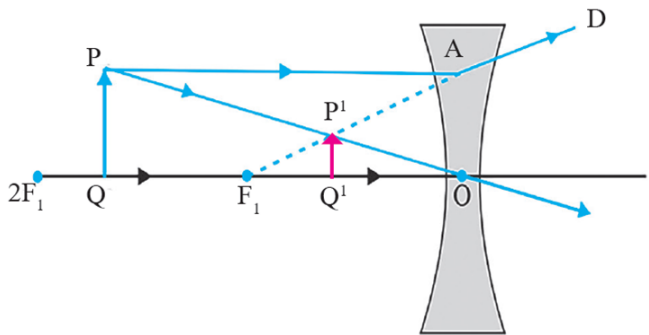
Ans



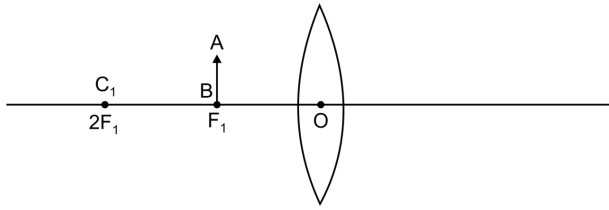
8 Complete the following ray diagram



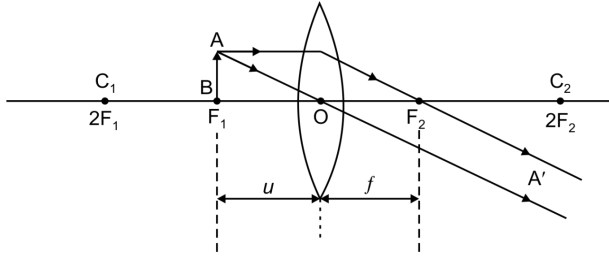
Ans



9

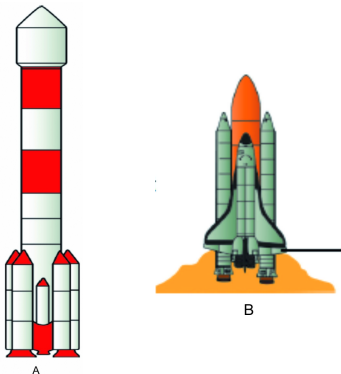


Ans



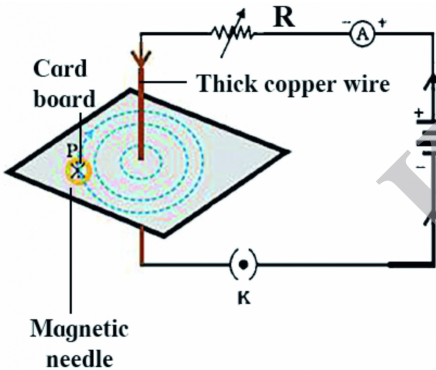
Q.4 Write answers based on given diagram/figure

1 Identify A and B. Write any one benefit of B over A.



Ans A represents structure of satellite launch vehicle while B represents a space shuttle. Space shuttle is beneficial as, unlike launch vehicle, it returns to earth after launching the satellite in desired orbit.

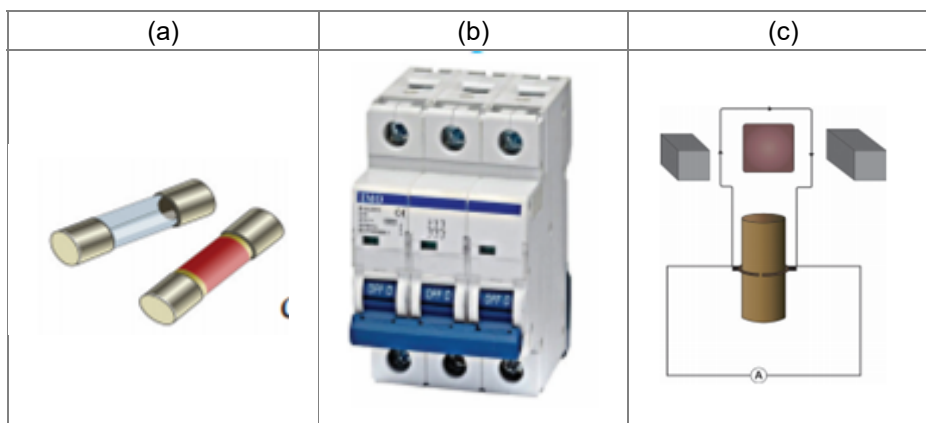
2 Observe the figure and answer the question.



- i. If the magnetic needle is taken away from the wire, what will you observe? Why?
- ii. Keeping magnetic needle at fixed position if current in the wire is increased, then what will you observe? Why?
- iii. What do the dotted concentric circles in this diagram represent ?

Ans i. As the needle is taken away from the wire, it will show less deflection. This is because magnetic field produced around copper wire reduces as the distance from wire increases.
 ii. As the current in the wire is increased, magnetic field produced around wire increases causing magnetic needle to deflect more.
 iii. The dotted concentric circles in the diagram represent magnetic lines of force around the wire.

3 Identify the figures and explain their use.



Ans	Figure (a)
i.	It is a Fuse.
ii.	It is a safety device used to protect the appliances from getting damaged if there is excess current flowing in the circuit.
Figure (b)	
i.	It is miniature circuit breakers (MCB) switches.
ii.	When the current in the circuit suddenly increases these switches opens and the current stops. Thus MCB is used to protect the household wiring from the excessive flow of electric current through it.
Figure (c)	
i.	It is an Electric motor.
ii.	Electric motor is used in fans, refrigerators, mixers, computers, pumps, etc.

4 The following is new land's octave table. Observe it and answer the following questions.

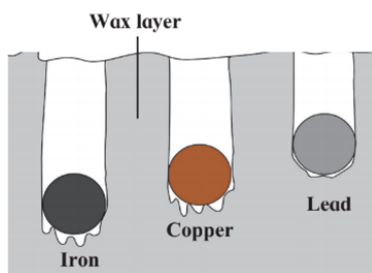
Sa (do)	Re (re)	Ga (mi)	Ma (fa)	Pa (so)	La (dha)	Ni (ti)
H	Li	Be	B	C	N	O
F	Na	Mg	Al	Si	P	S
D	K	Ca	Cr	Ti	Mn	Fe
Co & ni	Cu	Zn	Y	In	As	Se
Br	Rb	Sr	Ce and	Zr	-	-
			La			

- Which of the elements in 1st column has different properties from rest of the elements.
- Which of the elements resemble with each other in second column.
- Pick up odd elements in the second last column.
- Pick up elements which have similar properties in last column.

Ans

- Co and Ni
- Na and K
- Mn
- O, S, Se

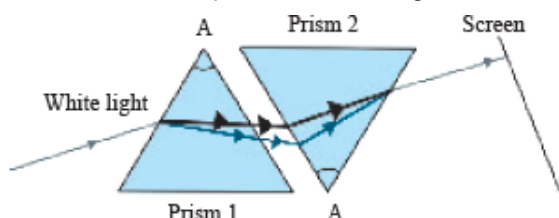
5 Observe the diagram and answer the questions:



- i. Name the property which determines the amount of heat absorbed by a sphere is different for the three spheres.
- ii. Define this property.
- iii. Give SI and CGS unit of this property.

- Ans**
- i. The property which determines the amount of heat absorbed by a sphere is different for the three spheres is Specific heat capacity.
 - ii. The amount of heat energy required to raise the temperature of a unit mass of an object by 1°C is called the specific heat capacity.
 - iii. The SI unit of specific heat is $\text{J/kg}^{\circ}\text{C}$ and the CGS unit is $\text{cal/g}^{\circ}\text{C}$.

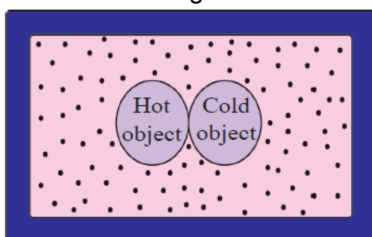
6



- (a) Which colour does the top line with arrow in prism 1 represent?
- (b) What is the colour of light obtained on the screen? Why?
- (c) Name the scientist who used a glass prism to obtain Sun's spectrum.

- Ans**
- (a) The top line with arrow in prism 1 represents red colour.
 - (b) White colour is obtained on the screen. When light passes through the first prism, dispersion takes place, and it splits up into seven constituent colours. When this spectrum of colours passes through the second prism which is kept inverted, the seven colours combine to form white light again.
 - (c) Sir Isaac Newton was the first person to use a glass prism to obtain Sun's spectrum.

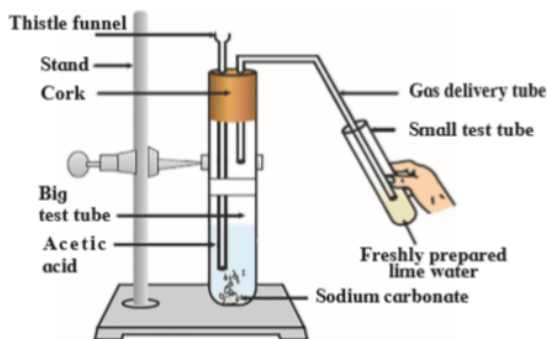
- 7 Observe the diagram and answer the questions.



- i. Which principle can be explained by given diagram?
- ii. State the principle.
- iii. Why both bodies are kept in a isolated box?

- Ans**
- i. Principle of heat exchange can be explained in given diagram.
 - ii. Principle of heat exchange is given as 'Heat energy lost by the hot object = Heat energy gained by the cold object.'
 - iii. In order to avoid the escaping of heat they are kept in a isolated environment in a heat resistant box.

8



Apparatus : Big test tube, small test tube, bent gas delivery tube, rubber cork, thistle funnel, stand, etc.

Chemicals : Acetic acid, sodium carbonate powder, freshly prepared lime water.

Procedure : Arrange the apparatus as shown in figure. Place sodium carbonate powder in the big test tube.

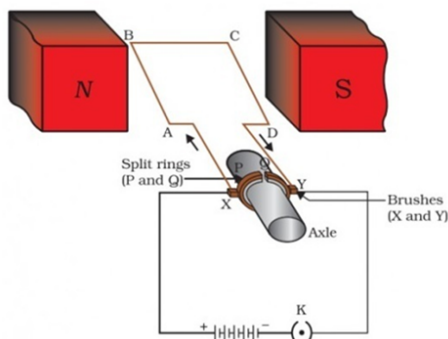
Pour 10 ml acetic acid through the thistle funnel.

Observe the changes taking place in the two test tubes.

- Which gas comes out as effervescence in the big test tube?
- What is the colour change in the lime water ?
- Give the chemical equation.

- Ans**
- Carbon dioxide [CO_2] is the gas evolved here.
 - The lime water turns milky white in colours due to CO_2 gas.
 - $2\text{CH}_3\text{COOH}(\text{aq}) + \text{Na}_2\text{CO}_3 \rightarrow \text{CH}_3\text{COONa}(\text{aq}) + \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g})$

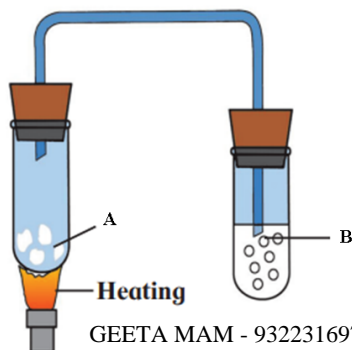
9 Observe and answer the questions :



- Recognize the given device.
- Name 2 electrical appliances which used this device.
- State the rule which is used to find the direction of force acting on a conductor.

- Ans**
- Given device is electric motor.
 - Fans, refrigerators, mixers, washing machines, computers, pumps (Any two is must)
The direction of force acting on a conductor is given by Fleming's left hand rule. According to this rule, the left hand thumb, index finger, and the middle finger are stretched so as to be perpendicular to each other.
 - the index finger is in the direction of the magnetic field, and the middle finger points in the direction of the current, then the direction of the thumb is the direction of the force on the conductor.

10



GEETA MAM - 9322316973

KUNAL SIR - 9049104040

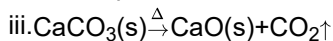
SEEMA MAM - 9890463044

From the above diagram answer the following question.

- Label A and B
- What is the aim of above experiment.
- Give the equation.
- Give one observation.

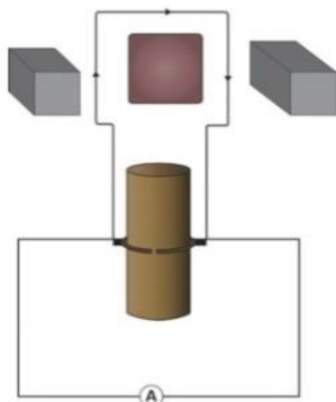
Ans i. A – calcium carbonate
B – lime water

ii. Decomposition of calcium carbonate



iv. Carbon-dioxide gas formed, turns lime water milky.

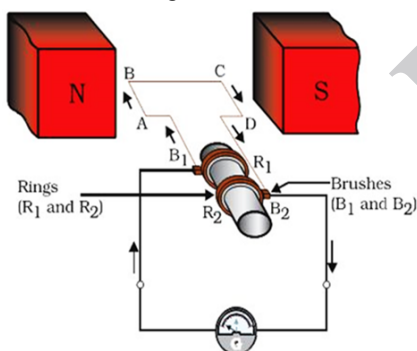
11 Observe the figure and answer the following questions.



- Identify the machine shown in figure.
- Write a use of this machine.
- How transformation of energy takes place in this machine.

Ans i. The instrument shown in figure is generator.
ii. This machine is used to generate electricity.
iii. The generator generates electricity through following transformations :
Mechanical Energy → Electrical Energy

12 Observe the figure and answer the questions :



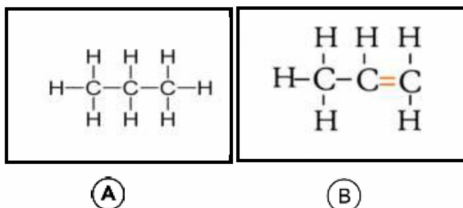
- Recognize the device in the diagram.
- Which rule is used to find the direction of induced current in the given device ?
- Which energy transformation is seen in given device ?

Ans i. Given diagram is of Electric generator.
ii. Fleming's right hand rule is used to find the direction of the induced current in the given device.
iii. In given device , mechanical energy is converted into Electrical energy.

13 Observe the straight chain hydrocarbons given below and answer the following questions:

- Which of the straight chain compounds from A and B is saturated and unsaturated straight chains?
- Name these straight chains.

iii. Write their chemical formulae and number of $-CH_2-$ units.



- Ans** i. A – Saturated hydrocarbons
 B – Unsaturated hydrocarbons
- ii. A – Propane
 B – Propene
- iii. A - C_3H_8 : Number of $-CH_2-$ is 3
 B - C_3H_6 : Number of $-CH_2-$ is 1

14 Identify the phenomenon shown in the figure. State and explain it.

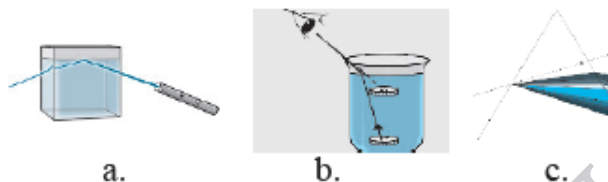
Ans (1) The phenomena shown in the figure is dispersion of light.

(2) The process of separation of light into its component colours while passing through a transparent medium is called dispersion of light.

As seen in the figure, when white light is incident on a prism, it emerges as a (3) spectrum of seven colours - red, orange, yellow, green, blue, indigo and violet.

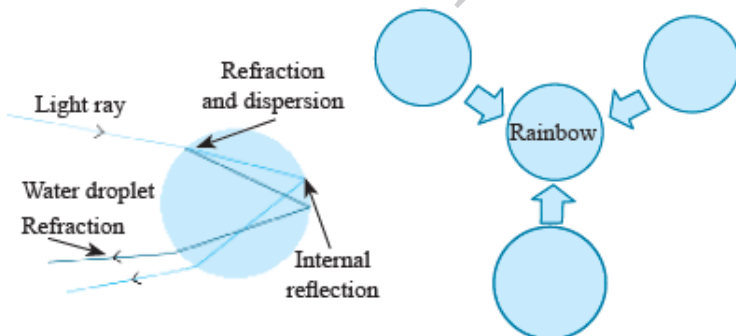
(4) Different colours bend through different angles. Among the seven colours, red bends the least while violet bends the most. Example : a rainbow.

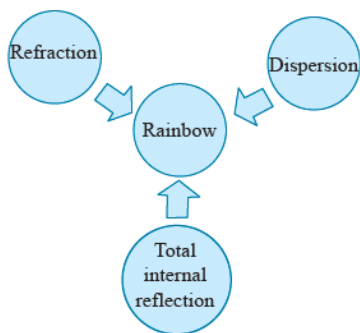
15 Observe the given figures and write the appropriate phenomenon of light for each.



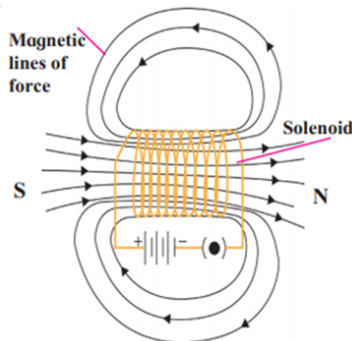
- Ans** (a) Total internal reflection
 (b) Refraction of light
 (c) Dispersion of light

16 Rainbow is a beautiful natural phenomenon. It is the combined effect of three natural processes produced together by light. Write it in the given circles.



Ans

17 Observe the diagram and answer the questions :

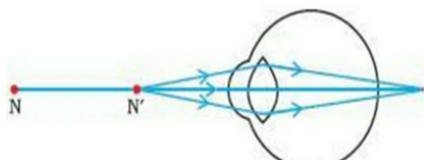


- What is the direction of the magnetic field in the given diagram ?
- What does parallel magnetic lines of force inside the solenoid mean ?
- Define : Solenoid.

Ans

- The direction of the magnetic field is from North pole to South pole.
- The parallel magnetic lines of force inside the solenoid mean the intensity of the magnetic field within the solenoid is uniform everywhere, i.e. the magnetic field in a solenoid is uniform.
- When a copper wire with a resistive coating is wound in a chain of loops (like a spring), it is called solenoid.

18 Observe the diagram and answer the questions :

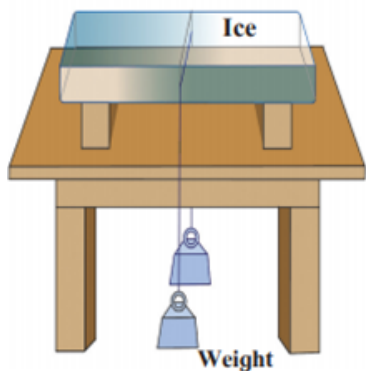


- Recognize the defect.
- Write reason for the defect.
- Write in brief about its correction.

Ans

- Hypermetropia.
- Curvature of the cornea and the eye lens decreases so that, the converging power of the lens becomes less.
 - Due to the flattening of the eye ball the distance between the lens and retina decreases.
- This defect can be corrected by using a **convex lens** with proper focal length. This lens converges the incident rays before they reach the lens. The lens then converges them to form the image on the retina.

19 Study the figure and answer the following questions.



1. Identify the phenomenon shown in the figure.
2. Explain the phenomenon.
3. What happens to the melting point when pressure is applied or removed from ice slab?

Ans i. The phenomenon shown in the figure is regelation.
 ii. The phenomenon in which the ice converts to liquid due to applied pressure and then re-converts to ice once the pressure is removed is called regelation.
 iii. The melting point of ice becomes lower than 0°C due to pressure. This means that at 0°C , the ice gets converted into water. As soon as the pressure is removed, the melting point is restored to 0°C and water gets converted into ice again.

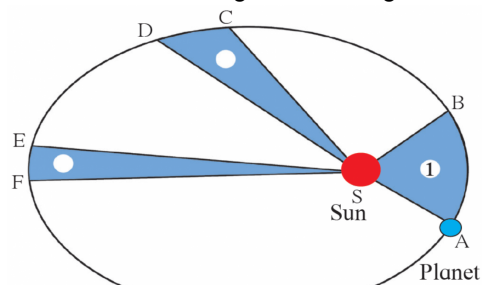
20



1. Name the device shown in the picture.
2. What is this device use for?
3. How does this device work?
4. Which other device works on the same principle?

Ans 1. The device shown in the picture is Galvanometer.
 2. A galvanometer is a device which is used to detect the presence of current in a circuit.
 3. In a galvanometer, a coil is positioned between the pole pieces of a magnet in such a way that the pointer on the dial is connected to it. When a small current flows through the coil, the coil will rotate. The rotation will be proportional to the current.
 4. Voltmeter and Ammeter works on the same principle.

21 Answer the following based on figures.

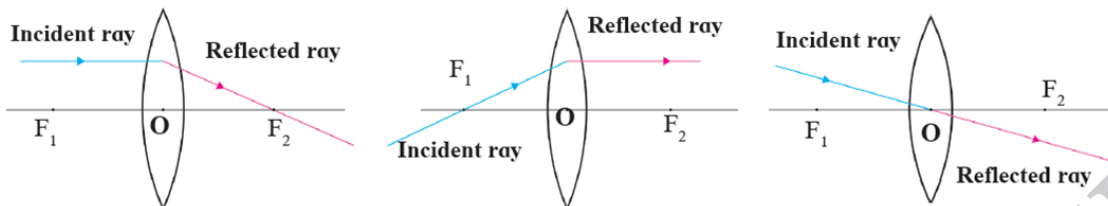


Questions :

- What is observed in the given figure and who formulated it?
- What is the first law of planetary motion ?
- Applying second law of planetary motion, what can we say about the motion of the planet ?

- Ans**
- The figure shows the orbit of a planet moving around the Sun and Kepler has formulated it.
 - The first law of planetary motion is- 'The orbit of a planet is an ellipse with the Sun at one of the foci'.
 - Applying second law of planetary motion, we can say that - The straight lines AS and CS sweep equal area in equal interval of time i.e. area ASB and CSD are equal.

- 22** State the rules used for drawing ray diagram for the formation of an image by a Convex lens, with the help of given diagram ?



- Ans** The rules for drawing ray diagram are :

- When the incident ray is parallel to the Principal axis, the refracted ray passes through the principal focus.
- When the incident ray passes through the Principal focus, the refracted ray is parallel to principal axis.
- When the incident ray passes through the optical centre of lens, it passes without changing its direction.

- 23** Observe the diagram and answer the question.

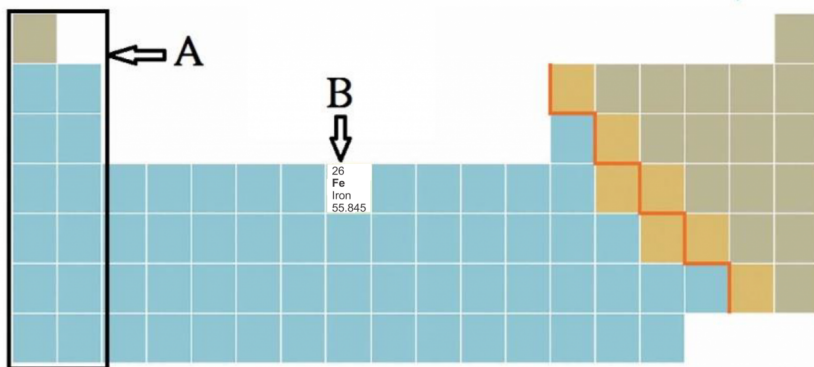


- Name of the force and the scientist who discovered it ?
- Book written by this scientist.
- Define the famous law given by this scientist.

- Ans**
- Gravitational force discovered by Sir Issac Newton
 - Book written by Sir Issac Newton is "Principia".
 - Newton's universal law of gravitation states that, 'Every object in the universe attracts every other object with a definite force which is directly proportional to the product of the masses of the two objects and inversely proportional to the square of the distance between them.

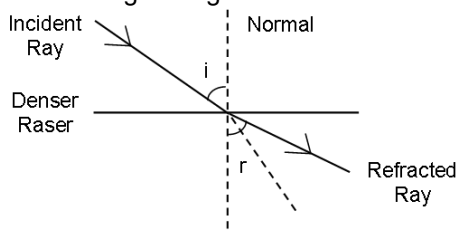
- 24** Observe the figure and answer the following questions.

- Identify the block shown by box A and write an electronic configuration of any one element of this block.
- Identify the block of element denoted by letter B and write its period number.



- Ans** i. The block shown by box A is s-Block.
 $Na(11) = 2, 8, 1$ (electronic configuration of any element in s block)
 ii. The block of element denoted by letter B is d – Block.
 The period number of that element is 4.

25 Observe the given figures and answer the following question.



- i. How is the ray moving in the diagram?
 ii. Give reason for your answer.

- Ans** i. The ray is moving from the denser to the rarer medium.
 ii. When the light moves from dense to rare medium, speed of light increase It travels more distance in same time interval and follow's more oblique path Hence it move away from the normal.

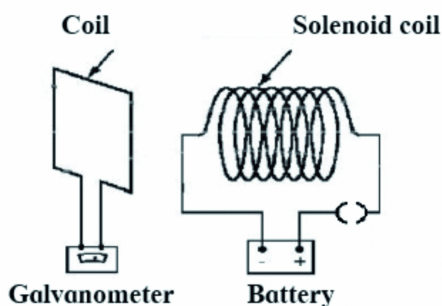
26 Study the radius of the element given below and answer the following questions.

Elements	K	Na	Rb	Cs	Li
Atomic radius (pm)	231	186	244	262	152

- i. Which of above element have smallest atom?
 ii. In which group of modern periodic table the above element are belongs?
 iii. What is the periodic trend observed in the variation of atomic radii down a group?

- Ans** i. Li
 ii. first group
 iii. while going down a group atomic radius goes on increasing. As a result, atomic size increases.

27 Observe the figure and answer the question.

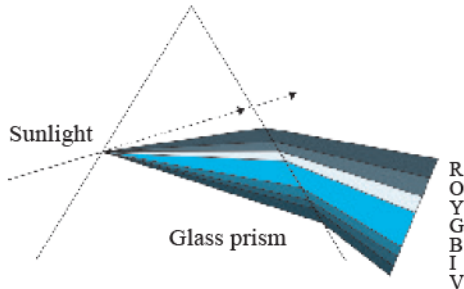


- i. When is the deflection observed in galvanometer ?
 ii. How will the deflection in galvanometer be affected if current carrying solenoid coil is displaced first slowly and then quickly with respect to call?
 iii. What will be the deflection in galvanometer when both coils are present and constant current is flowing

through solenoid coil?

- Ans** i. When the current in the solenoid coil is switched on or off or when the current carrying solenoid coil is displaced laterally or longitudinally with respect to coil, the deflection is observed in galvanometer.
 ii. Deflection in galvanometer will be smaller when current carrying solenoid coil is displaced slowly as compared to when displaced quickly.
 iii. The deflection in galvanometer will be zero.

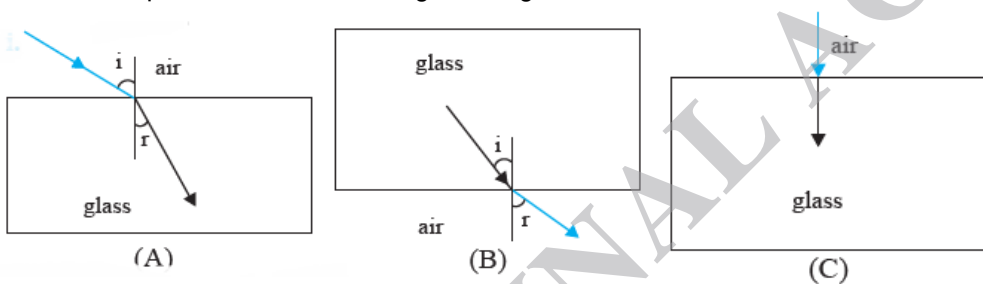
28 Observe the given figure and answer the following questions.



- (a) Which colour light rays bend the most?
 (b) Which colour light rays bend the least?
 (c) What is the wavelength of violet light?

- Ans** (a) Violet light rays bend the most.
 (b) Red light rays bend the least.
 (c) Wavelength of violet light is close to 400nm.

29 Answer the questions based on the given diagrams.



- (a) What do the diagrams represent?
 (b) Explain each diagram.

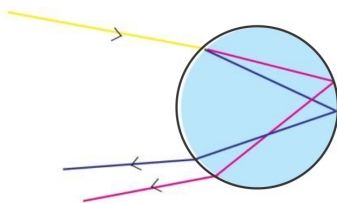
Ans (a) The diagrams show 'the refraction of light at the air-glass interface'.

In diagram (A), the ray of light passes from air to glass at an angle of incidence i . As the refractive index of air is less than that of glass, glass is denser than air. So the light travels from the rarer to the denser medium, and hence, it bends towards the normal.

(b) (i) In diagram (B), the ray of light passes from glass to air at an angle of refraction r . As the refractive index of glass is greater than that of air, the light travels from the denser to the rarer medium. So it bends away from the normal.

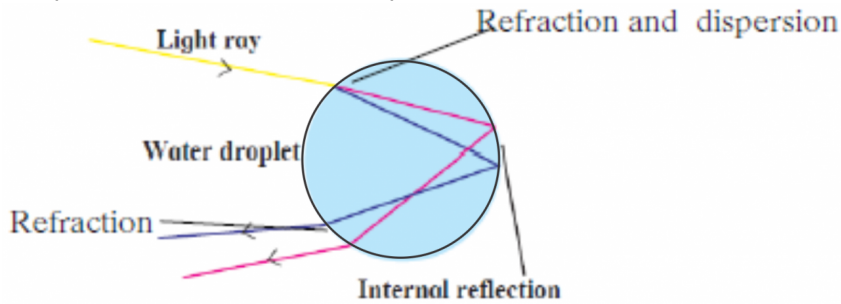
(ii) In diagram (C), the ray of light is incident normally at the boundary between air and glass. Therefore, it does not change its direction, but travels straight. That is, it does not get refracted.

30 Observe the given figure and answer the following questions.

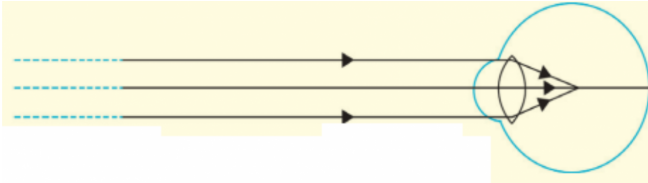


- Identify and write the natural process shown in the figure.
- List the phenomena which are observed in this process.
- Redraw the diagram and show above phenomena in it.

- Ans**
- The natural process shown in the figure is formation of rainbow.
 - The phenomena observed in this process are refraction, internal reflection and dispersion of light.
 -



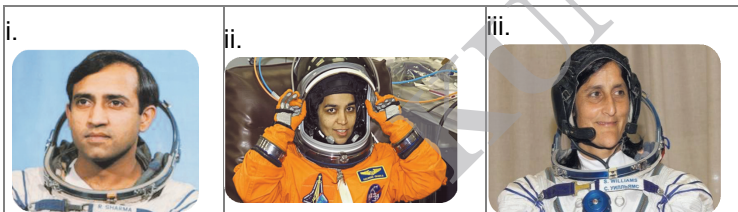
- 31** Observe the following diagram and answer the questions






- Which eye defect is shown in this diagram?
- What are the possible reasons for this eye defect?
- How this defect is corrected, write it in brief?

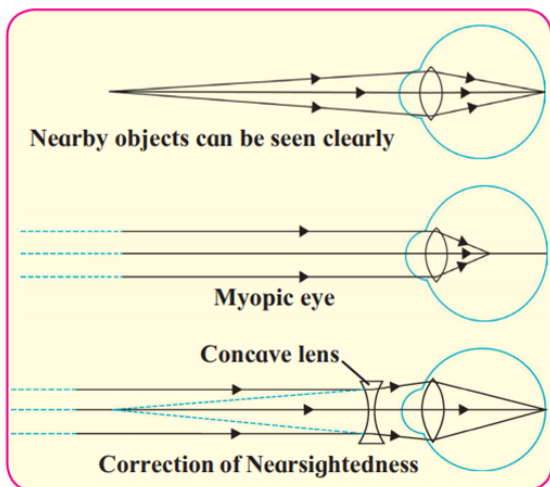
- Ans**
- Myopia or Nearsightedness
 - Possible reasons of defect
 - The curvature of the cornea and the eye lens increases. The muscles near the lens cannot relax so that the converging power of the lens remains large.
 - The eyeball elongates so that the distance between the lens and the retina increases.
 - correction of defect: this defect can be corrected using spectacles with concave lens. This lens diverges the incident rays and these diverged rays can be converged by the lens in the eye to form image on the retina.

- 32** Identify the person in the picture and write about their contribution to space mission.



- Ans**
- | | | |
|------|---|--|
| i. |  | Rakesh Sharma :- Rakesh Sharma was the first Indian to travel to space. He went into space along with two Russian astronauts under the joint Indo - USSR space programme. He stayed in space for 8 days. |
| ii. |  | Kalpana Chawla :- Kalpana Chawla obtained her Engineering in Aeronautics degree from Punjab and in 1988 obtained her doctorate from University of Colorado. She was in space for 336 hrs during research mission. While returning to earth from space, on 1st February, 2003, the Columbia space craft exploded and Kalpana perished. |
| iii. |  | Sunita Williams :- Sunita Williams travelled to the international space station in space shuttle Discovery in 2006. She worked for 29 hrs outside the space station. She created a record by staying for 192 days in space. |

33



Observe the following diagram and answer the questions.

- Which eye defect is shown in this diagram?
- What are the possible reasons for this eye defect?
- How this defect is corrected, write it in brief?

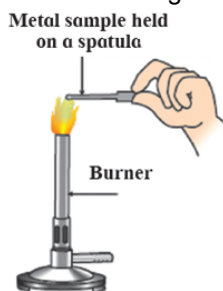
Ans i. Myopia or Nearsightedness

ii. Possible reasons of defect

- The curvature of the cornea and the eye lens increases. The muscles near the lens cannot relax so that the converging power of the lens remains large.
- The eyeball elongates so that the distance between the lens and the retina increases.

iii. correction of defect: this defect can be corrected using spectacles with concave lens. This lens diverges the incident rays and these diverged rays can be converged by the lens in the eye to form image on the retina.

34 Observe the figure and answer the questions below.



Samples of metals like aluminium, copper, iron, lead, magnesium, zinc and sodium are heated on the burner with the help of tongs.

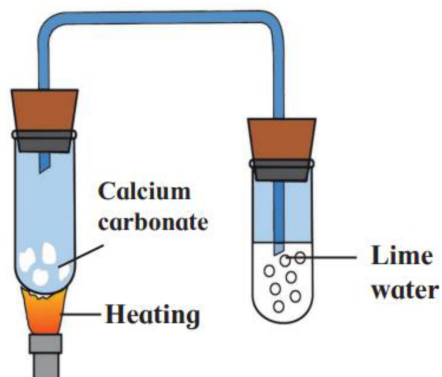
- Which metal will catch fire easily ?
- How does the surface of a metal appear on catching fire ?
- What is the color of the flame while the metal is burning on the flame ?

Ans i. Sodium metal will catch fire easily as it a very reactive metal and catches fire easily.

ii. The surface of the metal will appear black on catching fire.

iii. Different metals give different colors when burnt in flame. For example, sodium gives a yellow flame, potassium gives lilac, magnesium gives white color etc.

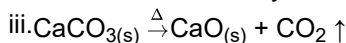
35 Study the following figure and answer questions.



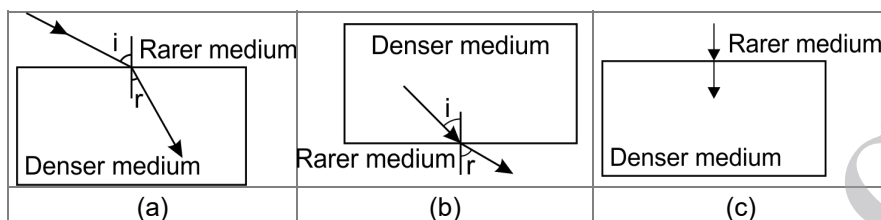
- After heating Calcium carbonate, which gas is formed in a test tube?
- When we pass this gas through limewater what change, did you observe?
- Write down the chemical reaction showing the product formation after heating the Calcium carbonate.

Ans i. Carbon dioxide

ii. lime water turns milky.

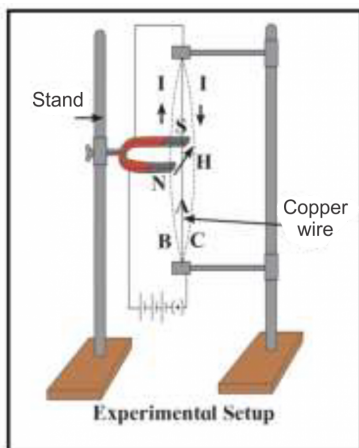


36 Observe the figure and write accurate conclusion regarding refraction of light.



- Ans** i. When a light ray passes from a rarer medium to a denser medium, it bends towards the normal.
 ii. When a light ray passes from a denser medium to a rarer medium, it bends away from the normal.
 iii. When a light ray is incident normally at the boundary between two media, it does not change its direction and hence does not get refracted.

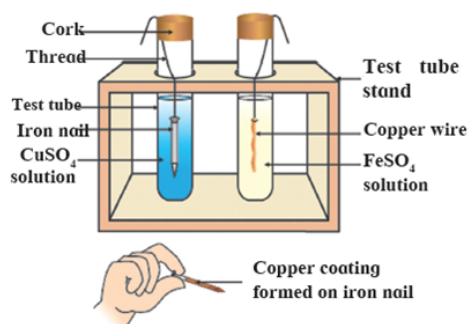
37 Observe the diagram and answer the given questions :



- Which principle is explained in the given figure ?
- Which rule is used to find the direction of force in this principle ?
- Which device works on this principle ?

- Ans** i. Principle explained is Force acting on a current carrying conductor in the presence of a magnetic field.
 ii. Fleming's left hand rule is used to find the direction of the force in this principle.
 iii. Electric motor works on this principle.

38 Observe the figure and answer the questions below.



- i. In which test tube a reaction has taken place ?
- ii. How can you recognize that the reaction has taken place ?
- iii. What is the type of reaction ?

- Ans**
- i. The reaction has taken place in the test tube in which the iron nail is placed in copper sulphate solution.
 - ii. The color of copper sulphate solution has changes from blue to light green while the iron nail also develops a rust like appearance.
 - iii. It is a Displacement reaction. The iron being more reactive than copper, displaces copper from copper sulphate solution and copper gets deposited over iron nail.

$$\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}.$$
 No reaction takes place in the other test tube as Copper being less reactive than Iron, cannot displace iron from Ferrous sulphate solution.