

**SPSR NELLORE DISTRICT COMMON EXAMINATION BOARD**  
**QUARTERLY EXAMINATIONS-OCTOBER-2015**  
**GENERAL SCIENCE , Paper – I**

(Physical Sciences)  
 (English Version)

Time: 2½ Hours

Parts A and B

Maximum Marks : 50

**Class-10 - KEY SHEET - PART-A**

**Section - I**

**Group -A**

1. The temperature of the cold soft drink bottle is less than the temperature of atmosphere. The water molecules present in air touches the surface of the bottle and lose their kinetic energy. As a result the temperature of water molecules decrease and condenses on the surface of the bottle. These water droplets are seen as dew.

2.

<b><u>Convex Mirror</u></b>		<b><u>Concave Mirror</u></b>	
1	This is a spherical mirror whose reflecting surface is curved outward is called convex mirror.	1	This is a spherical mirror whose reflecting surface is curved inward is called concave mirror.
2	The focus lies behind the mirror.	2	The focus lies in front of the mirror.
3	It is also known as diverging mirror.	3	It is also known as converging mirror.

3. Questions to be asked :

- (i) What is refraction?  
 (ii) Why light ray bends when travels from one medium to another medium?  
 (iii) The lemon in water appears in big size. Is it refraction?

**Note: any two questions related.**

4. Different lenses



Bi convex



Bi concave



Plano convex



Plano concave

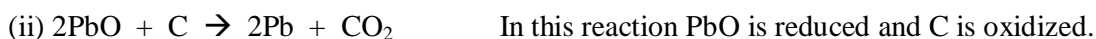
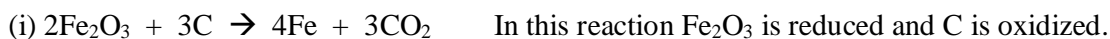


Convexo concave

**Group –B**

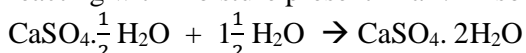
5. Rancidity is an oxidation reaction. When fats and oils are oxidized they become rancid. Their smell and taste changes. Oxidation reactions in food material that were left for a long period are responsible for spoiling of food. Rancidity can be prevented by adding preservatives like vitamin C and vitamin E and also anti oxidants.

6. **Examples for oxidation – reduction reaction:**



**Note : Any related answers are acceptable.**

7. Plaster of Paris should be stored in moisture-proof container. Because it turns into Gypsum after reacting with moisture present in air. Also it sets into hard solid.



SPSRN-SA-1  
2015-16

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8. Care must be taken while mixing concentrated acid with water. The acid must always be added slowly to water with constant stirring. If water is added to a concentrated acid, the heat generated may cause the mixture to splash out and cause burns.

### Section - II

9. Temperature : The intensity of heat is called temperature. (or)  
The degree of hotness or coldness of a body is called temperature.

**Note : Any related point should be acceptable.**

10. The light rays from the stars travel through many layers of earth's atmosphere which are having different refractive index values. The rays bent many times and in random directions. As a result, the stars appear twinkling.
11. While repairing watches, the mechanic uses convex lens.
12. Keeping food in air tight containers helps to slow down the oxidation process. If food items are kept in air tight bags, then the item does not react with oxygen. So they do not spoil.
13. Examples for water of crystallization
- |                        |  |
|------------------------|--|
| (i) Copper sulphate    | $\text{CuSO}_4 \cdot 5 \text{H}_2\text{O}$           |
| (ii) Gypsum            | $\text{CaSO}_4 \cdot 2 \text{H}_2\text{O}$           |
| (iii) Plaster of paris | $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$ |

**Note : Any related two examples.**

14. The reaction between an acid and a base to produce salt and water is called neutralization reaction.



### Section - III

#### Group -A

15. The specific heat of a substance is the amount of heat required to raise the temperature of unit mass of substance by one degree.

We have seen that the rise in temperature depends on the nature of the substance. Hence the specific heat of a substance depends on its nature. If the specific heat is high, the rate of rise in temperature or fall in is low for same quantity of heat supplied.

We know that the temperature of a body is directly proportional to the average kinetic energy of particles of the body. The molecules of the system (body or substance) have different forms of energies such as linear kinetic energy, rotational kinetic energy, vibrational energy and potential energy between molecules. The total energy of the system is called internal energy of the system. When we supply heat energy to the system the heat energy given to it will be shared by the molecules among the various forms of energy. This sharing will vary from substance to substance. The rise in temperature is high for a substance, if the maximum share of heat energy is utilized for increasing its linear kinetic energy. This sharing of heat energy of the system also varies with temperature. That is why the specific heat is different for different substances.

16. Role of reflection of light in daily life:

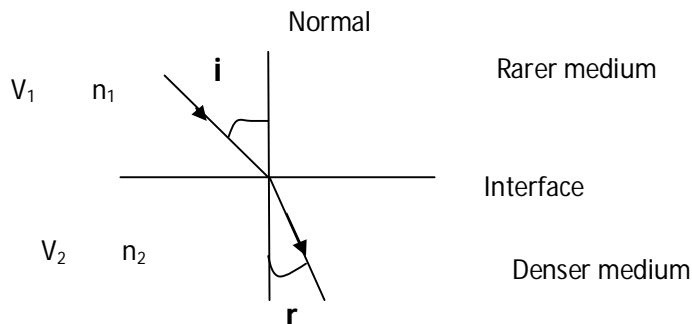
The mirrors works on the principle of reflection. There are so many uses of mirrors and reflection property. I appreciate the role of reflection due to following uses.

- (i) We can get different sizes of images and at desired distances by spherical mirrors.
- (ii) Spherical mirrors, which converges light at a point used in solar appliances.
- (iii) Concave mirrors are used by ENT doctors to see the effected parts more visible.
- (iv) Spherical mirrors are used in wars in olden days to destroy the ships.
- (v) Concave mirrors are used to see celestial bodies.
- (vi) Convex mirrors are used as rear view mirrors.
- (vii) We can see our face in plane mirror for make up.

**Note : Any related four points are enough.**

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17.



- (i) The upper medium is rarer and the lower medium is denser
- (ii) The angle I is incident angle and angle r is angle of refraction
- (iii) The velocities  $v_1 > v_2$
- (iv) The refractive indices  $n_1 < n_2$

18. Converging lens means convex lens.

For convex lens 'u' taken as negative.

Focal length (f) = 20cm

Object distance (u) = -60cm

Image distance (v) = ?

Lens formula :  $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$

$$\rightarrow \frac{1}{v} = \frac{1}{f} + \frac{1}{u} = \frac{1}{20} + \frac{1}{-60} = \frac{1}{20} - \frac{1}{60} = \frac{60-20}{20 \times 60} = \frac{40}{1200}$$

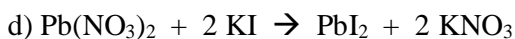
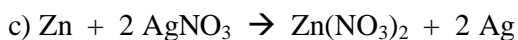
$$\rightarrow \frac{1}{v} = \frac{1}{30} \rightarrow v = 30\text{cm}$$

Here Object is placed beyond C.

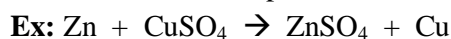
So image is formed between F and C. It is real, inverted and diminished.

### Group -B

19. The balanced chemical equations are:



20. Chemical displacement reaction: In a displacement reaction one element replaces another element from its compound.

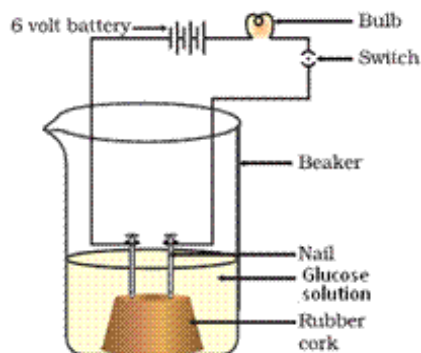


Chemical decomposition reaction: In a decomposition reaction one substance (reactant) decomposes into two or more new compounds.



21. Prepare solutions of glucose, alcohol. Connect two different coloured electrical wires to graphite rods separately in a 100 ml beaker. Connect free ends of the wire to 6 volts battery through a bulb & a switch. Make a circuit. Now pour some dilute HCl in the beaker and switch on the current. Repeat activity with dilute sulphuric acid and glucose and alcohol solutions separately.

We will notice that the bulb glows only in acid solutions but not in glucose and alcohol solutions. Glowing of bulb indicates that there is flow of electric current through the solution. Acid solutions have ions and the movement of these ions in solution helps for flow of electric current through the solution. Alcohol and glucose contains hydrogen but not dissociates hydrogen ion in their aqueous solutions. So they are not categorized as acids.



**22. Uses of Baking Soda ( $\text{NaHCO}_3$ ):**

- i) Baking powder is used in the preparation of bread and cake. Carbon dioxide produced during the reaction causes bread or cake to rise making them soft and spongy.
- ii) Baking soda is also an ingredient in antacids. Being alkaline, it neutralizes excess acid in the stomach and provides relief.
- iii) It is also used in soda-acid fire extinguishers
- iv) It acts as mild antiseptic.

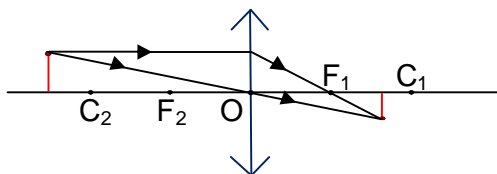
**Uses of Washing soda ( $\text{Na}_2\text{CO}_3$ ):**

- i) Sodium carbonate (washing soda) is used in glass, soap and paper industries.
- ii) It is used in the manufacture of sodium compounds such as borax.
- iii) Washing soda can be used as a cleaning agent for domestic purposes.
- iv) It is used for removing permanent hardness of water.

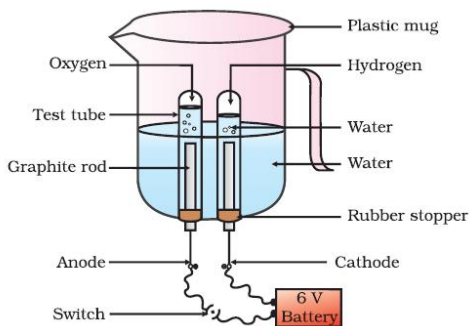
**Section - IV**

**23. Convex lens:**

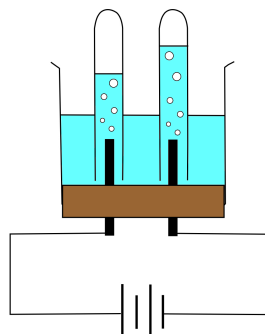
(i) If object is placed beyond  $C_2$  on the principal axis of a convex lens, the image will be collected between focus ( $F_1$ ) and centre of curvature ( $C_1$ ) on other side.



**24. Electrolysis of water:**



(OR)



## KEY SHEET - PART-B

Sl No.	Ans.	Sl No.	Ans.	Sl No.	Ans.
1	A	11	C	21	humidity
2	B	12	B	22	Pole
3	D	13	C	23	Less
4	C	14	A	24	$3 \times 10^8$
5	B	15	C	25	Light ray selects the path which takes least time to travel
6	A	16	D	26	D
7	B	17	B	27	E
8	A	18	D	28	A
9	B	19	A	29	B
10	C	20	A	30	C

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