

MAHABOOB NAGAR DISTRICT COMMON EXAMINATION BOARD
QUARTERLY EXAMINATIONS-OCTOBER-2015

GENERAL SCIENCE , Paper – I

(Physical Sciences)

(English Version)

Time: 2 Hours 45 Min.

Parts A and B

Maximum Marks : 50

Class-10 - KEY SHEET

Section - I

1. Apples pears, bananas, potatoes etc., contain enzyme called polyphenol oxidase or tyrosinase, which reacts with oxygen and changes the colour on the cut surface of the fruit.
2. Generally the saliva has P^H of weak base, 7.4. But it varies from man to man. After taking meals the P^H of mouth decreases. Bacteria present in the mouth produce acids by degradation of sugar and food particles remaining in the mouth. They form acids then P^H decreases , lower than 5.5.
3. We should keep the paper at the focus of the concave mirror, to burn it.
4. Chemical decomposition (or) Catalytic reaction (or) Exothermic reaction
5. Bleaching powder is used as disinfecting agent for water.
Its formula is $CaOCl_2$.
6. Convex lens is used in microscopes.
7. Convex mirror obtain the image of large view.

Section - II

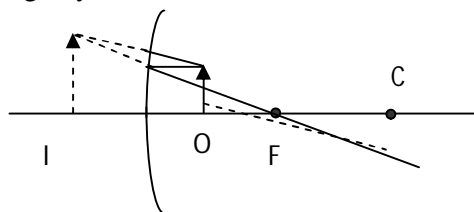
8. Problem : $m_1 = 200$ units
 $m_2 = 300$ units

$$T_1 = 30^\circ C$$

$$T_2 = 60^\circ C$$

$$\begin{aligned} \text{Final temperature as per Method of mixtures : } (T) &= \frac{m_1 T_1 + m_2 T_2}{m_1 + m_2} \\ &= \frac{200 \times 30 + 300 \times 60}{200 + 300} \\ &= \frac{6000 + 18000}{500} \\ &= \frac{24000}{500} \\ &= 48^\circ C. \end{aligned}$$

9. Neutralisation reaction takes place when antacid tablet is consumed.
Antacid tablet contains a weak base.
Formula of some antacids are $Mg(OH)_2$, $NaHCO_3$.
10. Dry HCl mean hydrogen chloride gas. It is not an acid. So it does not convert blue litmus paper into red.
If wet blue litmus is kept near the gas, Hydrochloric acid is formed and it converts blue litmus into red.
11. If we provide same amount of heat to the oil and water, but the raising in temperatures in both liquids are different. So different substances attain heat and temperature differently.
12. Virtual image by concave mirror.



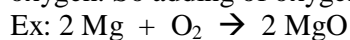
13. The figure indicates the experiment to show water of crystallization.

The parts : A - test tube B - water drops C - Copper sulphate D - Bunsen burner

Note : Any related answer can be acceptable.

Section - III

14A. Every combustion reaction (burning) is oxidation reaction. Because combustion needs oxygen. So adding of oxygen is oxidation. If magnesium burns, it reacts with oxygen.



This is combustion and also oxidation reaction.

Every oxidation reaction may not be combustion process. Because removing of hydrogen is also oxidation. There is no adding of oxygen and no burning. Oxidation takes place without burning.

Ex: Rusting of iron.

This is oxidation but not combustion.

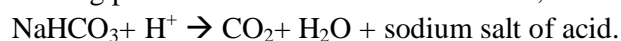
Note : Any related answer can be acceptable. No need to write equations. Examples are sufficient.

14B. Baking powder is a mixture of baking soda and a mild edible acid such as tartaric acid.

Baking soda is a mild non-corrosive base. But baking powder is a mixture of base and acid.

The cake turns to hard due to not adding of baking powder.

When baking powder is heated or mixed in water, the following reaction takes place.



Carbon dioxide produced during the reaction causes bread or cake to rise making them soft and spongy.

15A. convex lens 'u' taken as negative.

Focal length (f) = 15cm

Object distance (u) = -10cm

Image distance (v) = ?

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

$$\rightarrow \frac{1}{v} = \frac{1}{f} + \frac{1}{u} = \frac{1}{15} + \frac{1}{-10} = \frac{-10+15}{15 \times -10} = \frac{5}{-150}$$

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

This means object is placed between Focus and optic centre.

Then the image will be collected at object's side. At 30 cm.

The properties of image : Virtual, enlarged and Erect image.

15B. The liquid having highest specific heat value is water.

It gains heat slowly and loses heat slowly.

Importance of specific heat:

The sun delivers a large amount of energy to the earth daily. The water sources on earth, particularly the oceans, absorb energy for maintaining a relatively constant temperature. They can absorb large amounts of heat at the equator without rise in temperature due to high specific heat of water. Therefore oceans moderate the surrounding temperature near the equator.

Also ocean water transports the heat away from the equator to the polar regions. This transportation helps in moderate the temperature or climates in the areas that are far from the equator.

The water in oceans can stabilize the temperatures on earth in winter and summer seasons.

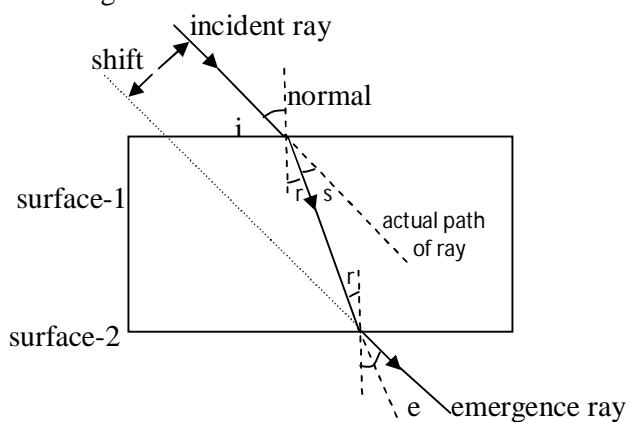
16A. Prepare aqueous solutions of acid and a base. Connect two different coloured electrical wires to graphite rods separately in a 100 ml beaker. Connect free ends of the wire to 6 volts battery through a bulb & a switch. Make a circuit. Now pour some dilute HCl in the beaker and switch on the current. Repeat activity with dilute sulphuric acid and NaOH solutions separately.

We will notice that the bulb glows in acid or base 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. Basic solution have also ions. They conduct electricity.

16B. For glass slab experiment we need glass slab, thermocole, pins, white paper, pencil, scale.

Figure:



Observations : The refracting surfaces of glass slab are parallel to each other. When light ray incident on one surface of the glass slab, it refracted twice and finally emerges from the second surface.

At first refraction it travels from rarer medium to denser medium. It bend towards the normal.

And at the second refraction it travels from denser medium to rarer medium. It bends away from the normal.

The perpendicular distance between the incident ray and emergence ray is called as lateral shift, if the slab is placed horizontally on the plane.

The angle between the actual path of ray and emitted ray is called angle of deviation (s). As they are parallel, the angle of deviation is 0° .

17A. (i) Speed of light is more in air. The refractive index of air is 1.0003

(ii) Kerosene is optically denser than water.

(iii) It bends towards the normal as it travels from rarer to denser medium.

(iv) Diamond is the denser medium. It has high refractive index value 2.42.

17B. (i) NaHCO_3 (as per question)

(ii) Base

(iii) HCl and NaOH

(iv) NaCl and KNO_3

18. B

19. B

20. C

21. A

22. C

23. B

24. C

25. A

26. B

27. B

Note : There should be given the substance as water in Q.No 25. Until we can not say. D may be also correct.