

KARIM 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. When antacid tablet is consumed, neutralization reaction takes place in our stomach.
2. *****

Note : Question is not in suitable pattern. So Full marks should be awarded.

3. (a) $2 \text{ Al} + \text{Fe}_2\text{O}_3 \rightarrow \text{Al}_2\text{O}_3 + 2 \text{ Fe}$
(b) $2 \text{ Mg} + \text{O}_2 \rightarrow 2 \text{ MgO}$
4. As heat is a form of energy, it travels from hot body to cold body.

Note: Any related point is acceptable.

5. To see complete image, I have to take the plane mirror of my size. If I want to collect my full image in a small mirror, then it is possible when I have selected convex mirror. Because it always forms small image.
6. Spherical Mirror Radius of curvature $R = 20 \text{ cm}$

$$\text{Focal length } f = \frac{R}{2} = \frac{20}{2} = 10 \text{ cm}$$

7. If object is placed between F and C, we get virtual and magnified image with convex lens.

Section - II

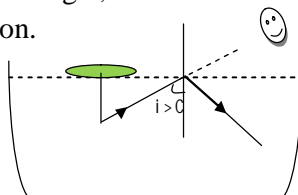
8. Apples pears, bananas, potatoes etc., contain enzyme called polyphenol oxidase or tyrosinase, which reacts with oxygen and changes the colour on the cut surface of the fruit.

9. Uses of Baking Soda (NaHCO₃):

- 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.
10. If electricity passes through distilled water, hydrogen and oxygen gases are evolved.

Note : Any related answer should be acceptable.

11. If incident angle is more than critical angle, then incident ray gets total internal reflection. That means it reflects instead of refraction.



12. The objects acts as spherical mirrors:

- (i) The spoons in our house
- (ii) The basin or dishes in our house
- (iii) The surface of bicycle bell
- (iv) The water drop
- (v) The surface of curved steel vessel
- (vi) The surface of steel lid on tins.

KARIM NAGAR-SA-1
2015-16

NAGA MURTHY- 9441786635
Contact at : nagamurthysir@gmail.com
Visit at : nagamurthy.weebly.com

13. Dogs pant during hot summer days to reduce their internal temperature. When dog pants, the water molecules get absorbed from its body and evaporated. As a result the interior of dog body gets cooled.

Section - III

- 14A. 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.

- 14B. Concave mirror

Distance of the object (u) = -25cm

Focal length (f) = -15cm

Object size (h₀) = 4 cm

Distance of the image (v) = ?

$$\text{Formula : } \frac{1}{u} + \frac{1}{v} = \frac{1}{f}$$

$$\frac{1}{v} = \frac{1}{f} - \frac{1}{u} = \frac{1}{-15} - \frac{1}{-25} = \frac{-25+15}{25 \times 15} = \frac{-10}{375} = \frac{-2}{75}$$

$$v = \frac{-75}{2} = -37.5 \text{ cm (on the object side)}$$

Object is placed between F and C. So image can be collected beyond C.

The properties of image : Real, inverted and enlarged.

- 15A. (i) Stand, test tube, delivery tube, glass tub, rubber cork with one hole
(ii) A liquid (HCl) is on the Zinc granules.
(iii) The bubbles represent the liberated hydrogen gas coming from the delivery tube due to reaction between Zinc and acid.
(iv) $\text{Zn} + 2 \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$

- 15B. (i) Reactants : Zn, HCl

Products : ZnCl₂, H₂

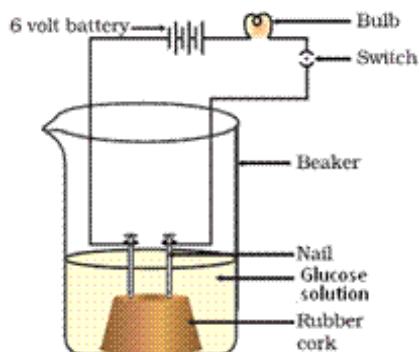
(ii) Chemical decomposition reaction (or) Catalytic reaction (or) Exothermic reaction

(iii) AgCl, a white coloured precipitate is formed.

(iv) Brown colour gas (NO₂)

- 16A. 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.

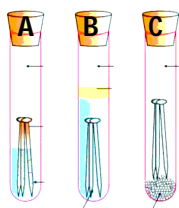
We will notice that the bulb glows only in acid solutions but not in glucose and alcohol solutions. Glowing of bulb indicates that there is flow of electric current through the solution. Acid solutions have ions and the movement of these ions in solution helps for flow of electric current through the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



16B. Take three test tubes and place clean iron nails in each of them. Label these test tubes A, B and C. Pour some water in test tube A and cork it. Pour boiled distilled water in test tube B, add about 1 ml of oil and cork it. The oil will float on water and prevent the air from dissolving in the water. Put some anhydrous calcium chloride in test tube C and cork it. Anhydrous calcium chloride will absorb the moisture, if any, from the air. Leave these test tubes for a few days and then We will observe that iron nails rust in test tube A, but they do not rust in test tubes B and C.

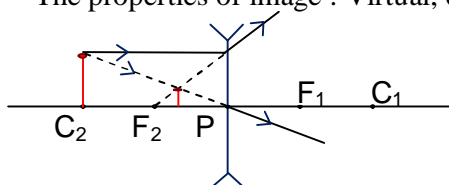
In the test tube A. The nails are exposed to both air and water. In the test tube B, the nails are exposed to only water, and the nails in test tube C are exposed to dry air.

So we conclude that Corrosion of iron (commonly known as rusting) occurs in presence of water and air.

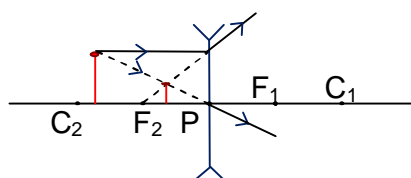


Note : This application part question is out of standard. So

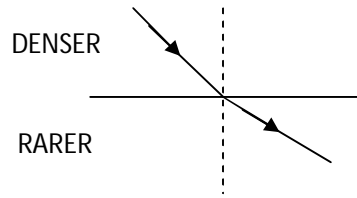
17A. (a) If object is placed at C_2 of a concave lens, the image can be collected between F_2 and P. The properties of image : Virtual, erect and diminished.



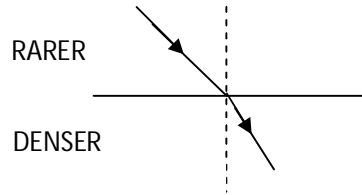
(b) If object is placed between F_2 and C_2 of a concave lens, the image can be collected between F_2 and P. The properties of image : Virtual, erect and diminished.



17B. (a) Light ray travels from denser medium to rarer medium.



(b) Light ray travels from rarer medium to denser medium.



18. C (or) D

19. A

20. C

21. C

22. A

23. C

24. B

25. B

26. A

27. C