SUMMER HOLIDAY HOMEWORK
CLASS X (PHYSICS)

1) Define the terms: i) Principal focus of spherical mirror
ii) Power of lens
iii) Magnification produced by mirror

2) Draw ray diagrams for image formation by concave mirror and convex mirror in all possible situations.

3) Draw ray diagrams for image formation by concave lens and convex lens in all possible situations.

4) Discuss the uses of concave and convex mirrors also convex lens and concave lens.

5) Explain laws of reflection and refraction of light.

6) Find the power of a concave lens whose focal length is 100 cm.

7) What will be the image distance of an object placed at 15 cm in front of concave lens of focal length 30 cm. also draw ray diagram.

8) Image formed is half the height of an object placed at 50 cm apart from lens. What will be the focal length, power and nature of the lens?

9) The image formed by the convex lens of an object placed in front of it, at 10cm,is virtual erect and twice the size of object. What will be the new position of image and its magnification if object is shifted at 20 cm in front of lens ?

10) Speed of light in water and air is 2.25×10^8 m/s and 3×10^8 m/s respectively. find refractive index of water with respect to air.

11) Refractive index of glass and water are 1.50 and 1.35 respectively. If ray of light is refracted in water from glass then find the refractive index of water with respect to glass.

12) Radius of curvature of concave mirror is 40cm and an object of length 4cm is placed at 30 cm apart from mirror. Find position and length of image formed by it.

13) Focal length of concave mirror is 12cm. Where should a 4cm long object be placed so that its image 1cm length is obtained?

14) An object of height 6cm is placed perpendicular to the principal axis of a concave lens of focal length 5cm. Use lens formula to determine the position, size and nature of image if the distance of the object from the lens is 10cm.

15) An object is placed perpendicular to the principal axis of a convex mirror of focal length 10 cm. The distance of the object from the pole of the mirror is 10 cm. Find the position of the image formed.

16) An object is placed at a distance of 10 cm from the optical centre of double size as that of object ?

17) Focal length of a convex lens is 20 cm. How far should we place the object in front of this lens to get image of double size as that of object?

18) Image formed is twice enlarge and virtual of an object placed 20 cm apart from a lens. Also draw ray diagram.

19) A 10 cm long pencil at a distance 20 cm far from a convex lens of focal length 15 cm is placed. Find position of image and length of image formed by the lens of principal.

20) A 5cm high object 20 cm far from a convex lens of focal length 40cm, is placed ,find the position ,nature, size of the image formed. Draw the ray diagram.

21) The image formed on a screen is three times magnified of an object by the convex lens. If position of object and screen get exchanged then in new situation find the magnification produced?

22) The image of an object which is placed at 36 cm apart from optical centre of a convex lens, formed at same distance from optical centre to other side of lens. What will be the focal length of lens and find the magnification produced?

23) Focal length of a convex mirror is 15cm. An object is placed at 30cm from the pole of mirror, find the position of image and draw ray diagram.

24) If a ray of light from air entre a glass medium of refractive index 1.50 and speed of light in glass is 2×10^8m/s then what will be the speed of light in vacuum?

25) If real image formed by a concave mirror is twice the size of an object placed at 10cm in front of it then what will be the position of image from the mirror?

26) The focal length of a concave mirror is 5 cm. where the image will be form of an object which is placed at 10 cm in front of it? Is this real image?

27) The focal length of a convex lens is 20 cm. a 2 cm long pin is placed at 10 cm far ahead from this lens. Find the length of image formed of pin.

28) An object of length 5 cm is placed 30 cm apart from center of a convex lens which of focal length 20 cm. find the position and size of image formed.

29) The refractive index of glass is 1.5. Speed of light in air is 3×10^8m/s. find the speed of light in glass.

30) The focal length of convex lens is 15 cm. How far the object should be placed in front of a lens so that its image formed at 10cm apart from lens? Also find the magnification produced by the lens.

31) If a power of a lens is 2.0 D then what will be the focal length an nature?

32) The refractive index of water and glass with respect to air are 4/3 and 3/2 respectively. If the speed of light and glass is 2×10^8m/s find the speed of light in air and water.

33) A student wants to project the image of a candle flame on a screen 60 cm in front of a mirror by keeping the flame at a distance of 15cm from its pole

a) Write the type of mirror should used
b) Find the linear magnification of the image produced
c) What is the distance between the object and its image.
d) Draw a ray diagram to show the image formation in this case.

34) It is desired to obtain an erect image of an object using concave mirror of length 12cm

a) What should be the range of distance of an object placed in front of a mirror
b) Will the image be smaller or larger then the object draw a ray diagram to show the formation of the image in this case.
c) Where will the image of this object be, if it is placed 24 cm in front of the mirror? draw a ray diagram for the situation also justify your answer. show the position of the pole, the principal focus and centre of curvature in the above diagram

35) If the image formed by the lens for all position of an object placed in front of it is always erect and diminished, what is the nature of this lens? Draw a ray diagram to justify your answer. If the numerical value of power of this lens is 10D what is its focal length in the cartisian system

36) An object of height 4cm is placed at a distance 30cm from the optical centre 'o' of a convex lens of a focal length 20cm. Draw a ray diagram to find the position and size of the image formed. Mark optical centre and focus in the diagram, also find the ratio h'\h.

37) Draw a level ray diagram for the formation of image by convex lens of focal length 15cm when the object is placed at a distance 25 cm from lens. Determine the size of image formed if size of the object is 4cm.

38) An object is placed at a distance of 60 cm from a concave lens of focal length 30cm

1) Use lens formula to find the distance of the image from the lens
2) List four characteristics of image
3) Draw the ray diagram in this case

39) A ray of light enters into benzene from air. If the refractive index of benzene is 1.50 by what percent dose the speed of light reduce on entering the benzene medium?

40) A ray of light falls normally on the surface of transparent glass slab draw a ray diagram to show its path and also mark the angle of incidence and angle of emergence.

SUMMER HOLIDAY HOMEWORK
CLASS X (BIOLOGY)

I. Prepare a model or chart paper on any one of the following topics using house hold items like grains, pulses, buttons etc..
Digestive system OR Respiratory system OR Circulatory System OR Heart .

II. Do the following worksheet in your fair note book.

1. The main respiratory substrate used in cells is...
- **a)** Glucose,
- **b)** GA lactose,
- **c)** fructose,
- **d)** Sucrose.

2. The structure which prevents the entry of food into respiratory tract is...
- **a)** Larynx,
- **b)** glottis,
- **c)** pharynx,
- **d)** Epiglottis.

3. The autotrophic mode of nutrition requires..
- **a)** CO_2 and H_2O,
- **b)** chlorophyll,
- **c)** sunlight,
- **d)** All of these.

4. Enzyme present in saliva is....
- **a)** Pepsin,
- **b)** Amylase,
- **c)** Trypsin,
- **d)** Lipase.

5. In which organelles does Krebs cycle take place...
- **a)** Vacuoles,
- **b)** Mitochondria,
- **c)** Both of the above,
- **d)** None of the above.

6. Define photosynthesis.
7. Define nutrition.
8. What is phagocytosis?
9. Why is ATP called energy currency of cell?
10. What are vascular bundles? Name then n write one function of each.
11. Though bile juice contains no digestive enzymes, but is important for the digestion of food . Explain .
12. Differentiate aerobic and anaerobic respiration .
13. Differentiate between breathing and respiration.
14. Define... a) Transpiration b) Translocation
15. What are the final products obtained after complete digestion in small intestine?
16. Define the terms...
a) Tongue b) saprophytes c) peristalsis.
17. What are the function of...
a) pepsin b) Hydrochloric acid c) Mucus.
18. Draw neat and well labeled diagram of open and closed stomata.
19. Draw and illustrate the flowchart of glycolic.
20. Define double circulation of blood with the help of diagram.

HERITAGE INTERNATIONAL SCHOOL
TALANAGRI, ALIGARH
HOLIDAY HOMEWORK
CHEMISTRY
CLASS: X
Worksheet: CHAPTER-1
CHEMICAL REACTION AND EQUATIONS

Q1.Calcium oxide reacts vigorously with water to produce slaked lime.
$CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq)$
This reaction can be classified as:
(A) Combination reaction
(B) Exothermic reaction
(C) Endothermic reaction
(D) Oxidation reaction
Which of the following is a correct option?

a. (A) and (C)
b. (C) and (D)
c. (A), (C) and (D)
d. (A) and (B)

Q2.When hydrogen sulphide gas is passed through a blue solution of copper sulphate, a black precipitate of copper sulphide is obtained and the sulphuric acid so formed remains in the solution. The reaction is an example of a:

a. Combination reaction
b. Displacement reaction
c. Decomposition reaction
d. Double displacement reaction

Q3.In a double displacement reaction such as the reaction between sodium sulphate solution and barium chloride solution:
(A) exchange of atoms takes place
(B) exchange of ions takes place
(C) a precipitate is produced
(D) an insoluble salt is produced
The correct option is:

a. (B) and (D)
b. (A) and (C)
c. (c) only (B)
d. (B), (C) and (D)

Q4. Strong heating of ferrous sulphate leads to the formation of a brown solid and two gases. This reaction can be categorised as
(a)displacement and redox. (b)decomposition and redox.
(c)displacement and endothermic. (d)decomposition and exothermic.

Q5. .Strong heating of ferrous sulphate leads to the formation of a brown solid and two gases. This reaction can be categorised as

(a)displacement and redox. (b)decomposition and redox.
(c)displacement and endothermic. (d)decomposition and exothermic.

Q6.A compound ‘A’ is used in the manufacture of cement. When dissolved in water, it evolves a large amount of heat and forms compound ‘B’.

(i)Identify A and B.
(ii)Write chemical equation for the reaction of A with water.
(iii)List two types of reaction in which this reaction may be classified.

Q7. Mention with reason the colour changes observed when:

i. silver chloride is exposed to sunlight.
ii. copper powder is strongly heated in the presence of oxygen.
iii. a piece of zinc is dropped in copper sulphate solution.

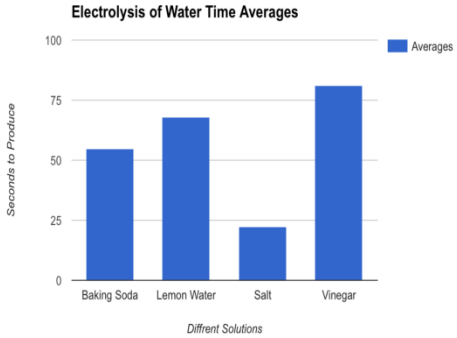
Q8.Lead nitrate solution is added to a test tube containing potassium iodide solution.

a. Write the name and colour of the compound precipitated.
b. Write the balanced chemical equation for the reaction involved.
c. Name the type of this reaction justifying your answer.

Q9. In a redox reaction, both oxidation, as well as reduction, takes place together, oxidation involves loss of electrons while reduction involves the gain of electrons. The redox- reaction may involve a combination of atoms and molecules, displacement of metals, or non-metals.
Example: $CuSO_4 + Zn \longrightarrow ZnSO_4 + Cu$
displacement of Cu metal from its compound.

i. In the above equation, which of the following gets reduced?
   a. $CuSO_4$
   b. Zn
   c. $ZnSO_4$
   d. None of these
ii. The oxidising agent generally:
   a. loses the electrons
   b. gains the electron
   c. is in a gaseous state
   d. both b and c
iii. Identify the oxidising agent and reducing agent in the above reaction
   a. Copper, Zinc
   b. Zinc, Copper
   c. Zinc, Zinc
   d. Copper, Copper
iv. Identify the type of reaction.
   a. Double displacement reaction
   b. Displacement reaction
   c. Substitution reaction
   d. Addition reaction

v. Based on the electrolysis of different solutions in water comment whose electrolysis will be the fastest



a. lemon water
b. baking soda
c. salt
d. vinegar

Q10.In the electrolysis of water

a. Name the gases liberated at anode and cathode.
b. Why is it that the volume of gas collected on one electrode is two times that on the other electrode?
c. What would happen if dil. H_2SO_4 is not added to water?

Q11. On heating blue coloured powder of copper (II) nitrate in a boiling tube, black copper oxide, O_2 and a brown gas X is formed.

a. Identify the type of reaction and the gas X.
b. Write balanced chemical equation of the reaction.
c. Write the pH range of aqueous solution of the gas X.

Q12. 2 g of silver chloride is taken in a china dish and the china dish is placed in sunlight for sometime. What will be your observation in this case ? Write the chemical reaction involved in the form of a balanced chemical equation. Identify the type of chemical reaction.

Q13.Identify the type of reactions taking place in each of the following cases and write the balanced chemical equation for the reactions.

a. Zinc reacts with silver nitrate to produce zinc nitrate and silver.
b. Potassium iodide reacts with lead nitrate to produce potassium nitrate and lead iodide.

Q14. What is a double displacement reaction? Explain with an example.

Q15.A small amount of quick lime is added to water in a beaker.

i. Name and define the type of reaction that has taken place.
ii. Write balanced chemical equation for the above reaction and the chemical name of the product formed.
iii. List two main observations of this reaction.

Q16. Design an activity to demonstrate the decomposition reaction of lead nitrate.

a. Draw labelled diagram of the experimental set-up. List two main observations.
b. Write balanced chemical equation for the reaction stating the physical state of the reactant and the products.

Q17**.** What is observed when a solution of sodium sulphate is added to a solution of barium chloride taken in a test tube ? Write equation for the chemical reaction involved and name the type of reaction in this case.

Q18. A metal 'X' acquires a green colour coating on its surface on exposure to air

a) Identify the metal and name the process responsible for this change.

b) Give the name and formula of the green coating formed on the metal.

Q19. Explain the significance of photosynthesis.

Write the balanced chemical equation involved in the process

Q20. Write balanced chemical equations for the following chemical reactions:

(a) Hydrogen + Chlorine → Hydrogen chloride

(b) Lead + Copper chloride → Lead chloride + Copper

(c) Zinc oxide + Carbon → Zinc + Carbon monoxide

Hindi
Class X.

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Holiday Home work.

1- पाठ - 1- बड़े भाईसाहब
2- कबीर स्मारती
3- पदबंध
4- रचना के आधार पर वाक्य रूपांतरण
उपरोक्त पाठों में से 10-10 बहुविकल्पीय प्रश्न बनाकर लिखिए।

2- समसामयिक विषयों पर कोई दो अनुच्छेद लिखिए।

3- किन्ही दो विषयों पर आवेदन विज्ञापन तैयार करें।

4- कोई दो लघु कथा लिखिए।